NETWORK WORLD

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NetWare 3.2 to reshape net landscape

By Caryn Gillooly
Senior Editor

PROVO, Utah — It's finally here, and it's hot.

Although Novell, Inc. is not expected to release details about NetWare 3.2 until its developers' conference next week, a handful of users, developers and analysts have seen the new network operating system in action and said it is more distributed, more powerful and more secure than anyone could have imagined.

"NetWare 3.2 will change the way people think about local- and wide-area networking," said one user. "It's hot. If anybody else says anything to the contrary, they must not have seen it."

According to sources briefed by Novell, Version 3.2 will be a completely new operating system designed virtually from the ground up.

"With NetWare 3.11, the thing you log on to is the file server; the file server is the center of the world," a developer said. "With [NetWare] 3.2, users will log on to the net, not the file server. The concept of the file server al-

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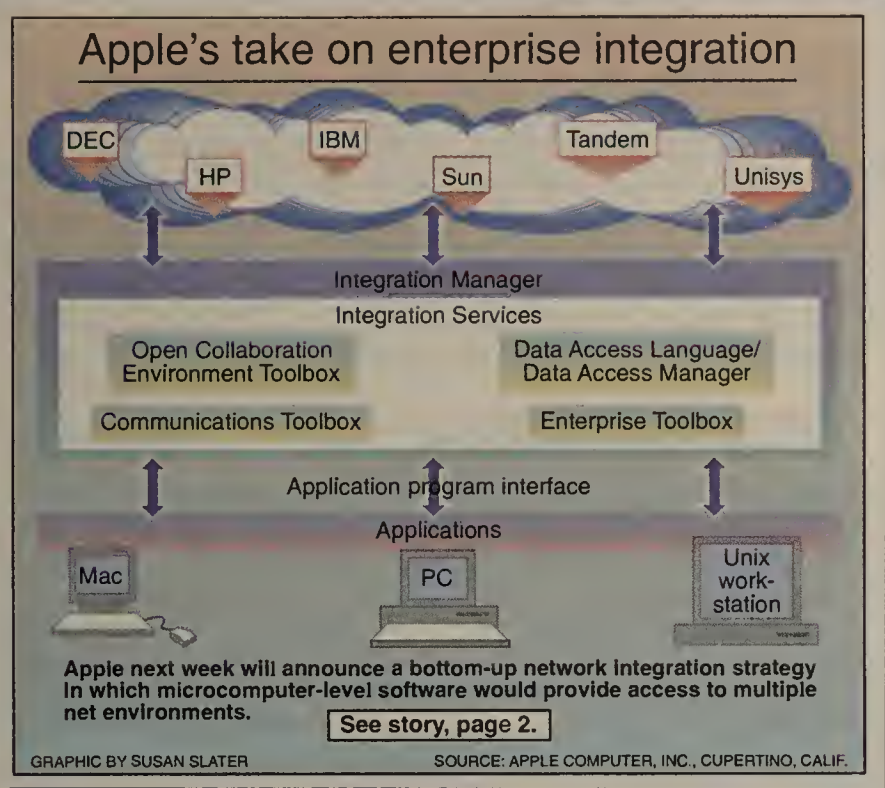

Apple next week will announce a bottom-up network integration strategy in which microcomputer-level software would provide access to multiple net environments.

See story, page 2.

GRAPHIC BY SUSAN SLATER | SOURCE: APPLE COMPUTER, INC., CUPERTINO, CALIF.

High cost, low availability chill JCPenney ISDN plans

By Bob Wallace
Senior Editor

DALLAS — JCPenney Company, Inc., one of the leading proponents of ISDN, last week said it has shelved plans for wide-scale use of ISDN Primary Rate Interface, saying the service is too expensive and not deployed widely enough.

JCPenney had wanted to use Integrated Services Digital Network PRI at 200 of its stores to provide integrated access to a variety of network services, consolidate trunks and reduce private-line usage. But the company has determined that those implementations will not be possible until 1995.

"Our intention was to put a [service] in place that could handle growth and support future ap-

(continued on page 40)

AT&T storms Europe in data net offensive

Puts infrastructure in place to take on pan-European carriers, provide foundation for future net offerings.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — AT&T last week broke into the European data network business with the announcement of a high-speed pan-European network that will initially span seven countries and ultimately support 16.

The 2M bit/sec wide-area network will enable AT&T to offer private-line and packet-switched services across Europe and position the company to become a full-fledged European carrier if and when current regulatory barriers fall.

The Commission of the European Communities (CEC) is expected to consider a ruling this year that could result in the abolishment of post, telegraph and telephone monopolies.

In a related announcement, AT&T unveiled a global net facilities management service and named its first customer, J.P. Morgan & Company, Inc. The investment firm has contracted AT&T to interconnect local-area networks in offices worldwide using the AT&T data network as its backbone in Europe.

That backbone consists of Network Equipment Technologies, Inc. E-1 multiplexers located in

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AT&T's data network will initially link 7 countries and later extend to 9 others.

GRAPHIC BY SUSAN J. CHAMPENY

NETLINE

3COM UNVEILS strategy for supporting SNA traffic on internetworks, upgrades product line. Page 2.

MICROSOFT, IBI developing software to give Windows access to a wide range of databases. Page 2.

LOTUS DEMOS new software, multimedia features for cc:Mail, Notes. Page 4.

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MCDATA UPGRADES LinkMaster network controller line. Page 4.

INTERNET MIGRATION to T-3 backbone stalled. Page 6.

NEWSPAPER

FEATURE

CIM users grasp need for flexible net underpinnings

By Laura DeNardis and Marvin Chartoff
Special to Network World

Driven by a lean economy, manufacturers are rethinking the ways they operate and are turning to emerging network technologies, such as client/server computing, to improve productivity.

During the past few years, manufacturers have been retiring legions of dumb terminals and replacing them with intelligent workstations on local-area networks. The goal has been to provide access from any shop floor terminal to any computing resource across the enterprise, rather than to a single host.

But more than just increasing the intelligence of nodes on the network, manufacturers are recognizing the importance of molding network architectures to fit computer-integrated manufacturing (CIM) plans.

While planners historically have given short shrift to the underlying net technology that supports CIM environments, manufacturers are working alongside net managers to lay a

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Cabletron's Spectrum to go modular

By Bob Brown and Joanne Cummings
Network World Staff

ROCHESTER, N.H. — Cabletron Systems, Inc. this month will announce a less expensive modular version of its Spectrum network management system as well as alliances with vendors that will develop applications to run on Spectrum.

The hub maker is also close to announcing plans for its next-generation hub architecture, possibly by next month, sources said. Cabletron's new hub architecture is expected to include third-generation hub features, such as a high-speed backplane and internal bridging, although full details were not available.

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Deal opens up Windows to wide array of data sources

Microsoft, Information Builders to develop tool that gives Windows access to multiple databases.

By Timothy O'Brien
West Coast Bureau Chief

SEATTLE — Microsoft Corp. and Information Builders, Inc. (IBI) last week announced an agreement to jointly develop software that will give Windows-based applications access to host-based databases, including those supported under IBM's Information Warehouse architecture.

The arrangement calls for the two firms to develop a driver for Open Database Connectivity (ODBC) that supports IBI's Enterprise Data Access (EDA)/SQL client/server database connectivity software. ODBC is Microsoft's Windows-based interface for data access.

The driver will give Windows users access to more than 50 relational and nonrelational data sources supported by EDA/SQL, resulting in what IBI calls universal data access from the desktop.

"With hundreds of tools vendors writing applications for ODBC, we believe EDA/SQL's further popularity and acceptance will be driven from the desktop," said John Senor, vice-president of IBI's EDA division.

The company's EDA/SQL is a family of client/server products

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3Com lays plan to weave SNA data in internetworks

Firm details strategy for upgrading product line.

By Maureen Molloy
Staff Writer

SANTA CLARA, Calif. — 3Com Corp. will roll out enhancements for its bridge/routers and intelligent hubs over the next 18 months that will enable users to better integrate SNA traffic into multiprotocol local-area network internets.

The company, which is scheduled to announce its long-term Systems Network Architecture strategy today, said it plans to remain consistent with IBM's SNA direction, which includes encapsulation of SNA data for transport across multiprotocol backbones. Ultimately, 3Com will support IBM's Advanced Peer-to-Peer Networking (APPN), which defines how devices communicate as peers in an SNA net.

"3Com understands they need to get closer to IBM networking, and their plans are being driven by APPN," said Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C.-based consultancy. "3Com is the only major router vendor who hasn't addressed the SNA issue yet. Now that IBM has blessed router-based internetworks for SNA traffic, 3Com plans to become a key player in this market."

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Apple maps enterprise net integration using desktops

By Margie Wylie
Senior Editor

SAN FRANCISCO — Apple Computer, Inc. next week will introduce a blueprint that proposes the solution to enterprise network integration from a new perspective, the desktop.

The plan, called the Virtually Integrated Technical Architecture Lifecycle (VITAL), recommends using software on microcomputers to mesh disparate networking architectures without changing their basic nature.

VITAL offers an alternate view to traditional architectures, which tell users how to integrate their systems from the host down, said Jim Groff, senior director of marketing for Apple's Enterprise Systems Division. Rather than forcing one system to fit another's mold, VITAL proposes that systems can coexist by bridging the differences at the desktop through a software layer Apple calls Integration Services.

These services would act as a buffer between host-based systems and user applications, shielding not only the user, but also the applications developer,

(continued on page 42)

Briefs

BT charged with unfair pricing. British Telecommunications PLC (BT) officials last week said a carrier has filed an action with the Commission of the European Communities charging BT with predatory pricing and other unfair business practices. The action stated BT was charging its BT Tymnet Worldwide packet-switched network less for circuits and for facilities to house equipment than it charges other companies. BT officials said they believed the carrier in question was Sprint Corp., but Sprint officials denied any knowledge of such a filing.

DEC goes multimedia. Digital Equipment Corp. last week announced it is teaming with Natick, Mass.-based Fluent, Inc. to jointly develop a family of multimedia applications. Based on Fluent's Fluency software, the new products will enable users to integrate still images and video into desktop applications. They will also support the real-time capture, compression and overlay of still images and full-motion digital video segments with synchronized audio.

IBM warming up to Sun? IBM has invited Sun Microsystems, Inc. to join IBM and Apple Computer, Inc.'s Taligent, Inc. joint venture, according to published reports last week. Taligent was formed recently to develop a portable operating system kernal, dubbed Pink, designed to let users run Apple's Macintosh operating system on other computers, such as IBM's RISC System/6000 workstations.

Neither IBM nor Sun would confirm the report.

Distributed meetings. Bell Communications Research last week held a first-of-its-kind business meeting in which participants in nine cities communicated over a distributed groupware network. The participants — mostly local exchange carriers — are part of an industry association, called the Groupware Special Interest Group, committed to developing and implementing groupware products.

The meeting was conducted using Ventana Corp.'s GroupSystems V software, a distributed groupware product that supports group decision-making processes.

SynOptics gets more secure. SynOptics Communications, Inc. last week announced the Model 3368, a new card for its LattisNet System 3000 10Base-T hub that provides low-cost, port-level data security. When used with a new management module the 3368 enables net managers to monitor and control user access to a 10Base-T Ethernet local-area network from a central console as well as ensure that data sent to certain destinations cannot be intercepted by unauthorized users. Available now, the Model 3368 is priced at $1,695.

France Telecom launches VSAT service. France Telecom last week announced a new regional very small aperture terminal network service. Dubbed Irisat, the service is available now in France and will soon debut in Germany, the U.K. and parts of North Africa. The service can support X.25 and Systems Network Architecture traffic. It is priced according to the size of the network, not by usage.

Sprint TeleMedia launches voice response service. Sprint TeleMedia last week announced Productivity Plus, a service that obviates the need for users to buy voice processing equipment to support interactive voice response applications. The company will instead work with users to develop databases that run on Sprint TeleMedia's own equipment.

CONTACTS

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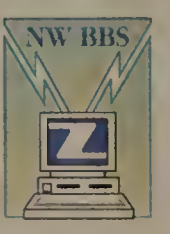

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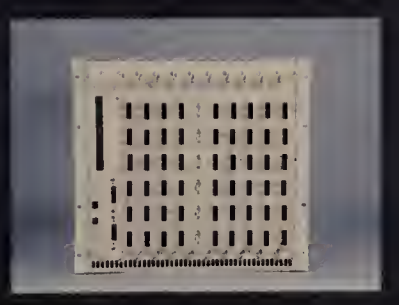

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Lotus demos multimedia features for cc:Mail, Notes

Company also unveils work group version of 1-2-3.

By Barton Crockett
Senior Editor

CAMBRIDGE, Mass. — Eager to spruce up its reputation for developing innovative software, Lotus Development Corp. last week demonstrated a series of multimedia, work group and application integration features it plans to support on flagship products over the next year.

During a press briefing at its headquarters here, Lotus showed new image and video features it plans to embed in its cc:Mail messaging software and Notes groupware. Lotus also showed off a new work group version of its 1-2-3 spreadsheet that works with Notes and gave its first demonstration of the software, codenamed Notebook, which lets users prepare ad hoc queries for pulling together information from multiple databases.

Lotus Chairman Jim Manzi said these technologies will help the software giant dominate the emerging market for net-based applications.

"Communications is the highest growth market out there," Manzi said. "It's central to everything we're doing."

Consultants applauded Lotus' actions. "They showed a lot of vision," said Bruce Silver, director of document and image management at BIS Strategic Decisions, a Norwell, Mass.-based consulting unit of Nynex Corp.

Lotus has previously demonstrated early versions of some of the multimedia capabilities it rolled out last week. But the vendor has never before exhibited so many multimedia products that far along in development, the company said. For example, Lotus demonstrated a Notes application that allows an employee to extract an electronic copy of a facsimile from a Notes database.

The fax was viewed and manipulated using a new imaging capability for Notes that Lotus is developing with Eastman Kodak Co., said Eric Sall, a Notes product manager. The imaging capability, called Lotus Notes: Document Imaging, was announced last spring and will be commercially available by year end.

In demonstrating its new technologies, Lotus also took a swipe at its competitors. For example, the company showed a videotape of Microsoft Corp. Chairman William Gates first endorsing — and then withdrawing support — for OS/2, which Microsoft developed with IBM. The video was stored in a Notes database on a machine equipped with a Digital Video Interactive chip from Intel Corp.

John Landry, Lotus' chief technology officer, said the company plans to support video on Notes within 15 months. But Christopher Herot, Lotus' director of advanced technology, said the vendor has yet to figure out how to distribute video across a local-area network.

Herot said Lotus is talking with several vendors about incorporating their LAN-based video technology into Notes. But products from these vendors — including Fluent, Inc. in Natick, Mass., and ProtoComm Corp. in Trevose, Pa. — can only support a small number of simultaneous video broadcasts on an Ethernet.

According to Landry, users that want to run distributed video to a larger number of users need 100M bit/sec Fiber Distributed Data Interface LANs.

Additionally, Lotus demonstrated a new version of cc:Mail for Macintosh that will support Apple Computer, Inc.'s new QuickTime software for compressing and decompressing video. This version of cc:Mail, which would let users send video mail between Macintoshes, is scheduled to ship by May.

Lotus also demonstrated, for the first time, a version of Notes that supports Macintosh worksta-

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Gandalf, HP set to unveil new multiprotocol routers

By Joanne Cummings
Staff Writer

Gandalf Technologies, Inc. and Hewlett-Packard Co. this week are each expected to unveil multiprotocol routers along with other internetwork offerings.

Gandalf's new Access Router cards are designed to be housed in its Access Hub intelligent wiring hubs. Developed jointly with Proteon, Inc., the new routers include an Ethernet-to-token ring offering as well as remote and local Ethernet-to-Ethernet devices.

> Gandalf's Access Router cards are to be housed in its Access intelligent wiring hubs.
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HP will introduce an Ethernet-to-token ring router and a thinwire Ethernet hub as part of its EtherTwist line of rack-mountable internetworking products.

Gandalf's AR 7422 Access Router is a card with a token-ring and Ethernet port that plugs into the Access Hub's Ethernet backplane. It has no wide-area ports and routes between Ethernet local-area networks and token-ring backbones, or vice versa.

Initially, the AR 7422 will route up to 5,000 packet/sec, but by midyear it will be upgraded to support up to 7,000 packet/sec, according to Peter Burke, director of Gandalf's LAN business unit.

The router supports Transmission Control Protocol/Internet Protocol, Novell, Inc. Internetwork Packet Exchange (IPX), Digital Equipment Corp. DECnet IV, Apple Computer, Inc. AppleTalk I, Open Systems Interconnection and Xerox Corp. Xerox Network Systems protocols. It supports the Router Information Protocol, Open Shortest Path First and End System-to-Intermediate System routing protocols, as well as spanning tree and source route bridging.

It has a Simple Network Management Protocol Management Information Base II agent and can be managed by Gandalf's Access Manager or any other SNMP-

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FCC opens global satellite mart to more competition

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — The FCC voted unanimously last week to expand competition in the international private-line market immediately and to lift rules preventing competition in switched satellite services on Jan. 1, 1997.

Until now, Communications Satellite Corp. has been the only international satellite carrier permitted to carry switched services and dump private-line traffic into the public switched net. COMSAT was given this virtual monopoly status by the government as the U.S. member of International Telecommunications Satellite Organization, a 118-member consortium set up to ensure that countries worldwide have access to satellite services.

Private satellite service providers, such as Alpha Lyracom Space Communications, Inc., have been restricted to carrying international private-line and television traffic. Now they will be able to originate, terminate or route a customer's private-line traffic over the public switched network. Within five years, they will also be able to carry switched network traffic for the first time.

The Federal Communications Commission ordered the rule changes at the urging of the Bush administration. Owing to the administration's support, the FCC took the unusual step of issuing its order without holding public hearings on the matter. FCC officials said opening satellite service to competition will foster innovation and bring prices down.

Users were pleased with the FCC's decision. John Lynn, telecommunications counsel for Electronic Data Systems Corp., said increased competition will benefit his firm by providing greater flexibility and bringing rates down.

In an earlier filing at the FCC, Citicorp said it supported competition in satellite services and that previous rules were too burdensome. The company said it was forced to segregate its international switched and private-line traffic because private satellite operators cannot carry switched services.

While the FCC decision cleared away a major regulatory hurdle, at least two more steps have to be taken before carriers can begin interconnecting private lines with the public network. FCC Common Carrier Bureau Chief Richard Firestone said carriers must file applications for approval by the FCC, and the U.S. must seek INTELSAT's approval for the rule change.

Firestone said INTELSAT has supported increasing competition in the satellite market. "I don't anticipate that [INTELSAT approval] will be a troublesome area," he said.

The effort to introduce competition in the international satellite market was driven largely by Alpha Lyracom. In a petition filed in July 1990, the company asked the FCC to drop restrictions on the provision of international services from private satellite operators. Alpha Lyracom withdrew its petition after the Bush administration last year said it wanted the restrictions on international service competition lifted by 1997.

McDATA expands Ethernet support for controller line

Also intros low-end model, other enhancements.

By Jim Duffy
Senior Editor

BROOMFIELD, Colo. — McDATA Corp. last week expanded and upgraded its IBM 3174-compatible LinkMaster 7100 Network Controller line to give users more options for accessing IBM mainframes from desktop systems.

Among the LinkMaster 7100's new features are the ability to use IBM's 3172 Interconnect Controller as an Ethernet gateway into IBM hosts and provide PU 2.0 support for Ethernet clients. The company also introduced a low-end remote controller and a multiplexer for attaching terminals to controllers over a single line.

When attached to an Ethernet local-area network, LinkMaster 7100 Models 10R, 20R and 60R can now use a channel-attached IBM 3172 Interconnect Controller to access an IBM mainframe. McDATA claims no other vendor, including IBM, can configure the 3172 as an Ethernet gateway for cluster controllers.

This capability allows users to retain existing Ethernet wiring and use the 3172 controller for supporting 3270 traffic. It also lets multiple controllers share a single mainframe channel.

The 7100 now provides PU 2.0 support for Ethernet-attached personal computers, allowing the desktop systems to emulate IBM cluster controllers, so logical sessions between the PCs and mainframe can be established using the 7100 as a local or remote gateway (see graphic, page 40).

McDATA also rolled out the LinkMaster 7100 Model 90R for linking remote sites to Systems Network Architecture nets. It can

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Correction: The story "IBM unveils CICS package for AS/400 minicomputers" (*NW*, March 2) incorrectly reported the delivery date for IBM's CICS/400. It will be available in March 1993.

IT'S FOR THE BIRDS. LITERALLY

On November 13, 1991, the U.S. Fish and Wildlife Service gave NTT its Corporate Wildlife Stewardship Award for its revolutionary technology that is increasing our knowledge of wildlife and helping rare species.

Snow geese are among the most beautiful of birds. Unhappily, deterioration of the environment along some of their migrating routes has seriously reduced certain populations. To protect these remarkable birds, locating their migratory stopovers is essential. Attaching an active transmitter is the best solution. But, until now, even the smallest transmitters weighed some 150 grams, much too heavy to use on birds.

New technology helps solve a mystery

NTT believes communications technologies are for exchanging information not only between people but also between man and his global environment. That is why NTT actively supported a U.S.-Russian-Canadian project to help save snow geese. NTT's R&D contributed the crucial new technology: an ultra-light satellite transmitter weighing only 55 grams. In summer of 1991, these tiny transmitters were attached to 30 snow geese from Wrangel Island in Siberia to determine their 3,000-mile migratory path to California.

NTT's President Masashi Kojima receives Corporate Wildlife Stewardship Award from USF&WS Director John F. Turner.

Picked up by satellite, the transmissions made it possible, for the very first time, to precisely locate migratory stopovers. In spring of this year, a similar project to trace the birds' return from California to Siberia is being planned. A mystery of nature is close to being solved.

NTT's new standard-setting 55 and 20 gram satellite transmitters.

An expanding commitment

A world leader in responsible technological innovations, NTT has recently perfected a satellite transmitter weighing only an unbelievable 20 grams! Such barrier-breaking developments are part of NTT's vision of communications technology that will preserve energy resources. The NTT Group is also working towards an NTT Global Environmental Charter, a further commitment to expanding possibilities on our planet Earth and preserving its irreplaceable treasures.

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Internet migration to T-3 stalled by router problems

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — High-speed routing problems continue to plague Advanced Network & Services, Inc.'s (ANS) nationwide T-3 network.

ANS, which is under contract to supply T-3 backbone services for the Internet under a National Science Foundation (NSF) subsidy, has been unable to obtain the Cisco Systems, Inc. T-3 routers it purchased last fall for shipping data at T-3 speeds.

ANS officials said that the prototype IBM RISC System/6000-based T-3 routers it also employs on the backbone have only been able to reach speeds of about 12M bit/sec at best.

"We're not running at full T-3 speeds yet," ANS President Allan Weis said last week. Technical analysis of the routing difficulties continues, but according to Weis, the main problem appears to center on the high volume of broadcast traffic required to communicate with the 5,000 nets attached to the Internet backbone.

"That's a difficult thing for routers to do," he said, adding that the Cisco AGS+ routers are now being used at 56K bit/sec speeds on parts of the NSF Network (NSFNET), while testing of the routers at T-3 speeds continues on the ANS T-3 test network.

However, Cisco officials were surprised to hear of the problems.

"It's news to me," said Christine Hemrich, software product manager at Cisco. "I'm

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> "We're not running at full T-3 speeds yet," ANS President Allan Weis said last week.
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Spectrum to go modular

continued from page 1

Sources said Cabletron will offer Spectrum 1.1 in modules that allow users to pay only for the capabilities they need. That new strategy and the alliances with third-party vendors, including Alantec, Kalpana, Inc. and Wellfleet Communications, Inc., will go a long way toward addressing user concerns about Spectrum.

Priced between $50,000 and $150,000, Spectrum is expensive compared to competing systems from vendors such as Hewlett-Packard Co. and Sun Microsystems, Inc. Sources said that even scaled-down, lower cost configurations of Spectrum are expected to provide functionality similar to other integrated management systems on the market.

The partnership program will boost Spectrum's ability to manage other vendors' products and marks a newfound willingness on Cabletron's part to open the system — a move welcomed by users.

Spectrum is designed to manage Cabletron products and other devices that support the Simple Network Management Protocol. The Unix-based system was unveiled about two years ago and has been shipping for almost a year.

Cabletron acknowledged it will announce Spectrum Version 1.1 later this month, but the company declined to provide details.

The new pay-as-you-go pricing strategy could make Spectrum available for half its current price or less. Users could buy Spectrum at an affordable up-front cost and migrate to a more sophisticated configuration.

That would give users an option, pricewise, between Cabletron's OpenView-based LANView net management system and a full-blown Spectrum system, said Jim Harrison, program director at META Group, a consultancy in Westport, Conn.

"It's a scaled-down version that will allow users to buy pieces of the puzzle," Harrison said.

Cabletron will further strengthen Spectrum by establishing a partnership program with other vendors to provide ties between Spectrum and other vendors' network equipment and to foster the development of new Spectrum applications, such as a trouble-ticketing system.

Spectrum will support various vendors' SNMP Management Information Base (MIB) extensions.

Cabletron's partnership program will also include OEM and other distribution and marketing agreements to position Spectrum for high-volume sales.

Cabletron will work with Alantec, Kalpana and Wellfleet, as well as other unnamed vendors, and will support Banyan Systems, Inc. MIB extensions on Spectrum, said a user who will be beta-testing Spectrum 1.1.

Cabletron previously announced a joint development agreement with Silicon Graphics, Inc. that has borne fruit in a new network analyzer application for Spectrum based on Silicon Graphics' NetVisualyzer product.

Reinier Tuinzing, director of product marketing at Kalpana, confirmed that his company will provide Cabletron with MIB extensions for controlling Kalpana Ethernet switches.

Wellfleet has built a module designed to let Spectrum manage its routers that is similar to a module it provides to Digital Equipment Corp. for DEC's integrated network manager, said a source who requested anonymity.

Remedy Corp. — an independent net management application vendor that designed a trouble-ticketing application in conjunction with Cabletron rival SynOptics Communications, Inc. — may also be readying a version of its trouble-ticketing application to run on Spectrum, sources said. Remedy officials declined to comment, but David Mahler, the company's vice-president of marketing, said he is encouraged by Cabletron's new willingness to work with other vendors.

"Cabletron has begun to work with other companies. Cabletron realizes it can't do everything by itself," he said.

Although users were happy about the upcoming release of Spectrum, most expressed dissatisfaction with the speed at which Cabletron has been improving the system.

John Scoggin, supervisor of network operations at Delmarva Power & Light Co. in Newark, Del., said he's been waiting for more than a year for features such as the expected Banyan VINES MIB. "I'm a little disappointed in Cabletron and the length of time it's taking them to get things done," he said.

Sam Shuler, communications strategy manager at Texas Instruments, Inc. in Dallas, was pleased to see Cabletron working with other vendors. "These particular additions intrigue me because Kalpana's EtherSwitch and Alantec's PowerHub are interesting high-capacity, work group-oriented systems that would not necessarily be attractive if they did not play well with a net management system," he said.

3Com plans to weave SNA data

continued from page 2

3Com plans to unveil a new hub module that can concentrate Synchronous Data Link Control traffic, plus an SDLC-to-Logical Link Control 2 (LLC2) conversion feature on the router itself. The latter is similar to capabilities planned by vendors such as Cisco Systems, Inc., IBM and Proteon, Inc.

The new module, which will fit into one of 3Com's existing LinkBuilder hubs, will be able to merge SDLC traffic from multiple cluster controllers at a site into a single SDLC trunk. It will then translate the SDLC data into LLC2 packets and feed that traffic into a bridge/router for transmission over a multiprotocol backbone.

This would significantly reduce the cost of supporting multiple SDLC lines to an IBM host.

3Com declined to provide further details about the hub.

For users with large token-ring networks, the vendor will also enhance its NETBuilder line of bridge/routers to provide SDLC-to-LLC2 translation. This will allow cluster controllers to connect directly to the bridge/router, enabling SDLC traffic to be carried on a token-ring network and bridged to the IBM host.

The feature also enables the router to terminate LLC2 timers and acknowledge packet receipt on behalf of remote devices. This obviates the need for acknowledgment data to be sent over wide-area links and keeps SNA sessions alive if a failure forces use of an alternate network path.

For users with Transmission Control Protocol/Internet Protocol-based internetworks, 3Com will provide LLC2-to-TCP/IP encapsulation. That will support SDLC transmission between SNA devices by encapsulating SDLC frames in TCP/IP packets, which are then routed using the Open Shortest Path First protocol.

These features will be available by early next year.

In the third stage of its SNA strategy, 3Com said it will support native SNA routing via APPN.

"IBM is migrating its customer base to APPN, and our offering will be fully consistent with IBM's internetworking direction," said John Pickens, director of 3Com's Communications Architecture.

APPN support will be available by the end of next year.

Analysts were high on 3Com's strategy, especially the new hub module.

The module will be most cost-effective for users with numerous SDLC devices at a remote site because it eliminates the need to install multiple routers, said one analyst who had been briefed by 3Com.

Kevin Jones, senior program analyst for the state of Maine's Bureau of Information Services, a large 3Com user, has also been briefed on the strategy. Jones, who is currently installing a TCP/IP backbone and has a large SNA network, applauded the plan.

"I have a huge SNA investment and multiple SDLC devices at remote agencies throughout the state. 3Com's strategy will enable us to better integrate these parallel networks," he said.

Gandalf, HP set to unveil routers

continued from page 4

compliant management system.

Available this week, the AR 7422 is priced at $8,995.

Gandalf is also expected to unveil the AR 7220, a remote Ethernet-to-Ethernet router card that offers two Ethernet ports and two wide-area ports supporting both T-1 and E-1 speeds. It routes the same protocols as the AR 7422 and is SNMP-compliant. Available now, it costs $7,995.

Gandalf will also announce the AR 7420, a local Ethernet-to-Ethernet router that supports the same protocols as the AR 7422. Available now, it is SNMP-compliant and costs $6,195.

HP's EtherTwist 27286A Router TR, has one Ethernet, one token-ring and two wide-area ports, each of which supports speeds up to 2M bit/sec. It also has a port that supports a link to a management console.

The product uses routing software from Wellfleet Communications, Inc. and uses Madge Networks, Ltd.'s Fastmac software to speed the routing, performing with throughput of up to 5,500 packet/sec. It features a QuickConfig utility that helps a user configure the router in five to 15 minutes, the company said.

The EtherTwist 27286A can be managed by any SNMP-compliant management system and route TCP/IP, DECnet IV, XNS, IPX and AppleTalk II protocols. It bridges other protocols using spanning tree on the Ethernet port and source routing on the token-ring port.

Available April 1, HP's router is priced at $8,500, slightly less than Gandalf's offering.

HP also plans to unveil the HP EtherTwist 28692A ThinLAN Hub Plus, designed for thin-wire coaxial Ethernet LANs. The hub has nine ports, each supporting 30 users, and one attachment unit interface port for connecting to a thin- or thick-wire, fiber or twisted-pair backbone.

Also available April 1, the new hub is priced at $2,900.

AT&T storms Europe in data net offensive

continued from page 1

Amsterdam, Brussels, Belgium, Frankfurt, Germany, London, Madrid, Spain, Paris and Stockholm, Sweden, that are linked with facilities leased from the European PTTs.

The multiplexers support private-line services and a packet-switched subnetwork supported by Bolt Beranek and Newman, Inc. X.25 packet switches. AT&T intends to extend the network to nine more countries by year end but declined to identify those sites.

Tom Urmanowicz, AT&T's network development manager, said customers can either procure their own access links to the network or have AT&T contact the PTT on their behalf.

AT&T will initially limit private-line services to speeds ranging from 2,400 to 64K bit/sec. "Most customers will be satisfied with those rates," Urmanowicz said, emphasizing that the growth of the network will be based on user demand.

European X.25 packet-switched services will support similar speeds and various protocols, according to Urmanowicz. "We'll handle a number of different protocols — X.25 direct, SNA, asynchronous and [BSC] — and we'll add functionality as customers require."

Stanley Kabala, vice-president of AT&T's business special services, said NCR Corp. and London-based value-added service provider AT&T Istel — both now owned by AT&T — have assisted in the rollout of the European network and are expected to play a key part in network provisioning and maintenance.

New guard

AT&T will be competing for European data network business with carriers such as Syncordia, British Telecommunications PLC's global net outsourcing unit, and Cable & Wireless, which will soon enter the race.

Len Elfenbein, president of Lynx Technologies, Inc., a Little Falls, N.J., consultancy specializing in international telecommunications, predicted other European PTTs, such as France Telecom, will also enter the pan-European net arena.

AT&T is limited to providing data services by regulations that give PTTs a monopoly over public and private switched voice services. But later in the year, the CEC will consider lifting restrictions on switched voice services.

The resulting competition would force prices down and enable customers to either use private networks for voice or lease their own voice lines. Sufficient deregulation might spur AT&T to lay its own lines across Europe instead of leasing them from PTTs.

In addition to the European network, AT&T last week vaulted into the global facilities management business, touting its new Accumaster Management Services as the answer for international businesses that want to outsource management of their networks in foreign countries.

"We've deployed global network management centers in the U.S. and the U.K., and as a result, we're able to provide end-to-end global management for the day-to-day operations of our customers' private-line, local- and wide-area networks in a multivendor environment," Kabala said. AT&T will open a third network management center in the Netherlands by year end, he added.

AT&T's management services will include "fault management, provisioning and change and performance management," Kabala said. "We'll also do all or any part of building a new network or upgrading an existing network."

AT&T views NCR, with its worldwide offices, as its prime agent for handling LAN interconnection and maintenance. In Europe, AT&T will sell both its pan-European network and its global management services through AT&T Istel, while U.S. sales will be handled by AT&T.

The first U.S. customer for both the European network and the global management services is J.P. Morgan, whose internet LAN traffic was cut over to the AT&T network last month. Under the three-year, $8 million contract, AT&T will install and manage J.P. Morgan's LAN internetwork in Europe and take on net maintenance and monitoring for the firm's offices in North America, Asia and Australia.

Peter Miller, managing director of J.P. Morgan, said the AT&T outsourcing deal would save the firm money but declined to say how much. J.P. Morgan has more than 10,000 personal computers worldwide, and only about 500 are supported by the internet today.

Tom Hynd, vice-president and manager of network services at J.P. Morgan, said the company's global LAN environment includes Ethernet and token-ring networks running various protocols, including Apple Computer, Inc. AppleTalk and Digital Equipment Corp. DECnet.

UDS LanFast™ network modem puts your node on the road

Access to local area networks now extends well beyond the office walls, thanks to the new LanFast DM 20 from UDS.

The LanFast DM 20 is a LAN-resident dial-in/dial-out device, with a built-in V.32 *bis*/V.42 *bis* modem and Ethernet LAN adapter card. Its presence on a Novell LAN enables your "road warriors" to access the network, using a standard modem, from any place that offers a standard telephone jack.

The unit supports thick, thin or 10BaseT Ethernet, giving remote users and local nodes the same access to E-mail, shared databases and other network resources. Three levels of security deny access to unauthorized users, and a second high-speed serial port extends network reach by accommodating an external modem or high-speed digital device.

LanFast DM 20 is shipped with all necessary hardware and software. For remote access, it supports standard modems at speeds to 57.6 kbps and popular communications programs such as Procomm Plus Network and Crosstalk Mk. IV.

If your people on the move need everyday access to their home-base LANs, let them take a node on the road. For full details, contact UDS at:

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UDS

MOTOROLA

Worth Noting

"We'll figure out who the market leaders are in each segment and interoperate with them."

John Thompson
Vice-president and general manager
IBM's Application Business Systems
Somers, N.Y.
Referring to the company's networking strategy for its AS/400 minicomputer line.

Data Packets

Digital Equipment Corp. last week rolled out a low-end multiprotocol terminal server module for its DEChub 90 Ethernet hub.

The new DECserver 90TL connects terminals, printers, personal computers and modems to Transmission Control Protocol/Internet Protocol hosts on Ethernet local-area networks. The offering can also be configured as a standalone device.

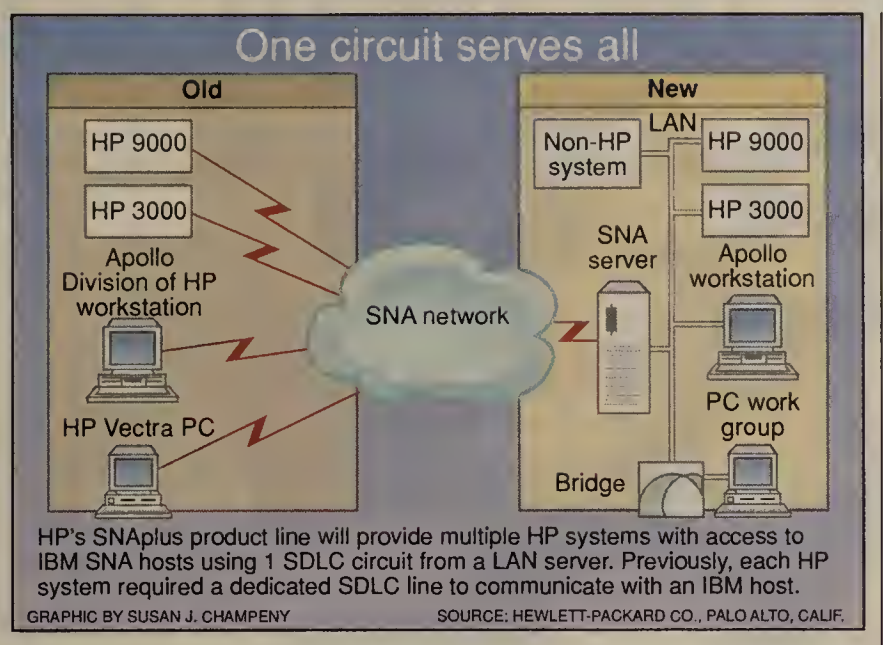
The hub-based version of the DECserver 90TL is priced at $1,595, while the standalone configuration is priced at $1,750. Software for the devices, which is downloaded from a DEC host computer, costs $650.

The DECserver 90TL is available now.

Telenex Corp. recently unveiled an entry-level matrix switch targeted at small distributed network sites.

A minimum configuration of the Micro-Matrix Switch supports nonblocked switching for 16 data terminal equipment ports and 16 data communications equipment ports. The switch can be expanded on-line to support as many as 96 ports.

Prices for the Micro-Matrix Switch start at $10,600. It is expected to be available in the third quarter.



HP's SNAplus product line will provide multiple HP systems with access to IBM SNA hosts using 1 SDLC circuit from a LAN server. Previously, each HP system required a dedicated SDLC line to communicate with an IBM host.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: HEWLETT-PACKARD CO., PALO ALTO, CALIF.

HP pack offers single SNA link for multiple systems

Common APIs add portability across platforms.

By Jim Duffy
Senior Editor

PALO ALTO, Calif. — Hewlett-Packard Co. last week rolled out software to link its LAN-attached workstations and servers to IBM mainframes over a single circuit, obviating the need to forge separate links from each machine.

HP SNAplus software consists of HP's existing IBM Systems Network Architecture connectivity wares, but common application program interfaces (API) have been added that make applications easily portable among HP platforms. The software also lets multiple HP machines share a communications link to an SNA network, enabling HP systems to communicate with IBM hosts in a client/server environment.

The common communications link also saves users money by enabling multiple HP machines to share a single link to an IBM mainframe, whereas HP's existing SNA product line forces users to establish dedicated Synchronous Data Link Control connections to IBM mainframes from each HP system.

The IBM link is established via a local-area network server running SNAplus (see graphic, this page). The server, which can be one of a number of HP machines, handles all communications processing, a task previously handled by each client separately, said Nicholas Ordon, marketing manager for HP's Information Networks Division.

HP is rolling out SNAplus in phases. Its Unix-based 9000 Series clients and servers will be addressed first because customers are demanding Unix platforms, the company said. Also, HP's proprietary MPE/iX-based HP 3000 systems already have more SNA connectivity features than the Unix processors, according to company officials.

Future releases of SNAplus will add features to the MPE/iX line and support HP Apollo Domain workstations, as well as MS-DOS and the Open Software Foundations, Inc.'s OSF/1 operating systems.

HP will also support IBM's Advanced Peer-to-Peer Networking (APPN) end-node technology, which will allow HP systems to participate as end nodes in IBM APPN nets.

SNAplus products for the HP-UX Unix-based operating system, meanwhile, include a card and software to establish SDLC access to the host, software that allows HP systems to emulate IBM 3270 terminals and API software that allows multiple HP systems to access SNA hosts using IBM's LU 6.2 protocol.

The card and software package for data link access to the SNA host is called HP SNAplusLink. The product runs on HP 9000 Series Models 700 and 800 systems and emulates an IBM 3174 or 3274 controller, supporting 254 concurrent logical unit sessions.

The 3270-emulation software, HP-UX SNAplus3270, runs on Models 300, 400, 700 and 800 of HP's 9000 Series systems. It supports multiple concurrent sessions, IBM 3287 printer emulation and IBM's IND$FILE file transfer between the 9000 Series

(continued on page 19)

MasterCard close to awarding Omni pacts

IBM Series/1 to be replaced at 300 locations as part of the credit card firm's massive net upgrade.

By Jim Duffy
Senior Editor

ST. LOUIS — MasterCard International, Inc. will soon disclose the names of the vendors that will supply equipment and services to be used in a major upgrade of its credit card transaction network.

Fourteen months after kicking off Project Omni, an ambitious five-year, $65 million upgrade of MasterCard's Banknet X.25 packet-switched network, the credit card service provider has selected a computer supplier to replace the aging IBM Series/1 processors now used in more than 300 locations to link member banks to the network.

The new Unix-based systems, called Member Interface Processors (MIP) will be configured as packet assembler/disassemblers to package data for transmission across Banknet.

MasterCard has also chosen a carrier to provide and service international leased lines for Banknet, as well as maintain transmission equipment, such as modems and multiplexers, at Banknet node locations.

Philip Verdi, executive vice-president of electronic services at MasterCard, declined to disclose the vendors. He said that the identity of the computer vendor will be made public within the next 30 days and that MasterCard is "very close" to signing a contract with a carrier.

Sources, however, said the MIP supplier could be AT&T's NCR Corp. subsidiary. NCR would neither confirm nor deny the reports.

Sources also said MasterCard has renewed AT&T's deal to lease and service Banknet's circuits. AT&T is currently the supplier of Banknet's T-1 circuits. An AT&T spokesman declined to comment.

(continued on page 18)

FTS 2000 video users need more than standard codec

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — The General Services Administration this fall will begin offering standards-based video codecs with services offered under FTS 2000, but users on the separate AT&T and Sprint Corp. networks still will not be able to share videoconferencing sessions.

Federal Telecommunications System 2000 vendors AT&T and Sprint will upgrade their incompatible coder/decoders to the Compression Labs, Inc. standards-based Rembrandt II/VP. But unless the GSA, manager of the FTS 2000 contract, pushes to include a gateway and new services in the deal, government users will lag behind their private-sector counterparts in available videoconferencing capabilities.

The lack of a gateway between the AT&T and Sprint FTS 2000 reserved video services — those in which users reserve bandwidth from the vendors in advance — leaves agencies unable to communicate governmentwide. And the fact that the FTS 2000 networks are not connected to AT&T's and Sprint's public reserved services — Accunet Reserved and Sprint Meeting Channel, respectively — means government users cannot reach commercial industry users.

Only a few dozen government sites use AT&T reserved services, but the carrier expects that number to reach 110 by year end.

Bob Denny, video project manager for the Environmental Protection Agency, an AT&T FTS 2000 customer, said his agency wants connection to public videoconferencing services because it interacts with chemical and oil companies, many of which use the technology.

Another complaint is that some FTS 2000 contract restrictions leave users with limited

(continued on page 19)

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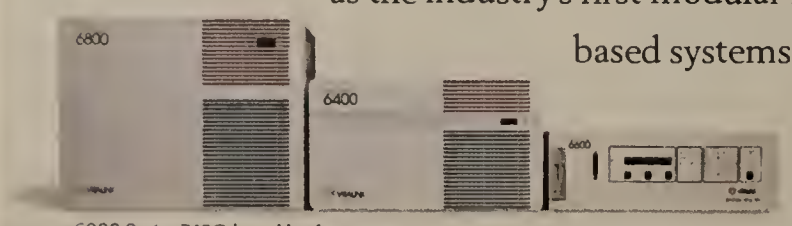

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LOCAL NETWORKING

LAN HARDWARE, NETWORK OPERATING SYSTEMS AND LAN MANAGEMENT

Worth Noting

"While token ring has not been without its share of technical and cost barriers, leading-edge Fortune 1,000 users have implemented it fairly equally [as compared to Ethernet] in terms of actual numbers of LANs."

Barry Gilbert
Industry analyst
Computer Intelligence
La Jolla, Calif.

Netnotes

Wandel & Goltermann, Inc. (W&G) last week announced its DA-30 protocol analyzer now supports the Fiber Distributed Data Interface, allowing users to monitor, filter and generate traffic from a single- or dual-attached station on an FDDI net. W&G's DA-30 Internetworking Analyzer is a modular local- and wide-area net analyzer that can provide full seven-layer protocol decodes on two net topologies simultaneously.

A DA-30 fitted with FDDI capabilities costs $35,300, while the FDDI interface alone costs $15,900. The new interface will be available in September.

Intel Corp. recently unveiled a software package designed to safeguard Novell, Inc. NetWare local-area networks against computer viruses. The package, called LANProtect, is server-based software that can detect and isolate more than 850 known viruses.

The software continuously scans all incoming and outgoing files and isolates infected files in a private directory.

LANProtect is available now at a cost of $995 per file server.

SunSoft unveils kit to ease application development

Tools are geared toward Sun's RPC technology.

By Margie Wylie
Senior Editor

MOUNTAIN VIEW, Calif. — In a world where network applications grow more critical and networks themselves grow more complex everyday, SunSoft wants to give developers a break.

The Sun Microsystems, Inc. wholly owned subsidiary has announced the ONC RPC Applications Toolkit, a collection of software development tools that will let Solaris 1.0 developers create network applications that interoperate with other ONC RPC-compliant applications, regardless of the platform used or method of transport.

The kit is based on Sun's own Open Network Computing Transport Independent (TI) Remote Procedure Call technology.

Remote procedure calls are designed to free programmers from writing different versions of their distributed applications for every platform on which the application must run. The technology promises to allow developers to write one set of application code that can be ported freely to different types of computers running different network protocols.

SunSoft's ONC RPC Application Toolkit will let developers configure Solaris 1.0 applications — which run on Sun SPARCstations — to interoperate with different applications on other platforms that use Sun's ONC-flavor remote procedure call. Companies such as Netwise, Inc. offer ONC RPC tool kits for various platforms, including DOS, OS/2 and Apple Computer, Inc.'s Macintosh.

Sun officials said the ONC TI-RPC is different from other remote procedure calls because it is the first that does not require de-

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Pack offers SNMP support for TCP/IP-based Macs

By Margie Wylie
Senior Editor

HERNDON, Va. — Macintoshes can feel a little more at home on a TCP/IP network with the introduction of a new version of InterCon Corp.'s TCP/Connect II, which started shipping last week.

Version 1.0.9 of the Transmission Control Protocol/Internet Protocol connectivity software will now let Simple Network Management Protocol-based management systems retrieve a wider range of information from Apple Computer, Inc. Macintoshes. It also offers a better text editor and other minor improvements.

TCP/Connect II is a software package designed to give Macintosh users the tools they need to operate in a TCP/IP environment without sacrificing the intuitive, icon-based Macintosh interface.

"I just really became aware of this huge worldwide [Internet] last year, basically through this product," said Gary Glover, research and development engineer for McDonnell Douglas Space Systems Co., an aerospace engineering firm based in Huntington Beach, Calif.

Along with about 100 other users here, Glover now uses TCP/Connect II to swap electronic mail messages, files and news with clients at the National Aeronautics and Space Administration as well as others worldwide.

TCP/Connect II offerings

For a $495 per-user fee, TCP/Connect II gives customers a terminal emulator, File Transfer Protocol client and server software, E-mail send and receive capabilities, an SNMP agent and a Network News Transport Protocol utility that lets users access Internet news services, such as Usenet, through a point-and-click interface.

In addition to Apple's AppleTalk Management Information Base (MIB) I SNMP agent that shipped in previous versions, TCP/Connect II 1.0.9 offers an agent that conforms to the new AppleTalk MIB II specification, which has not yet received final approval from the Internet Engineering Task Force ("AppleTalk

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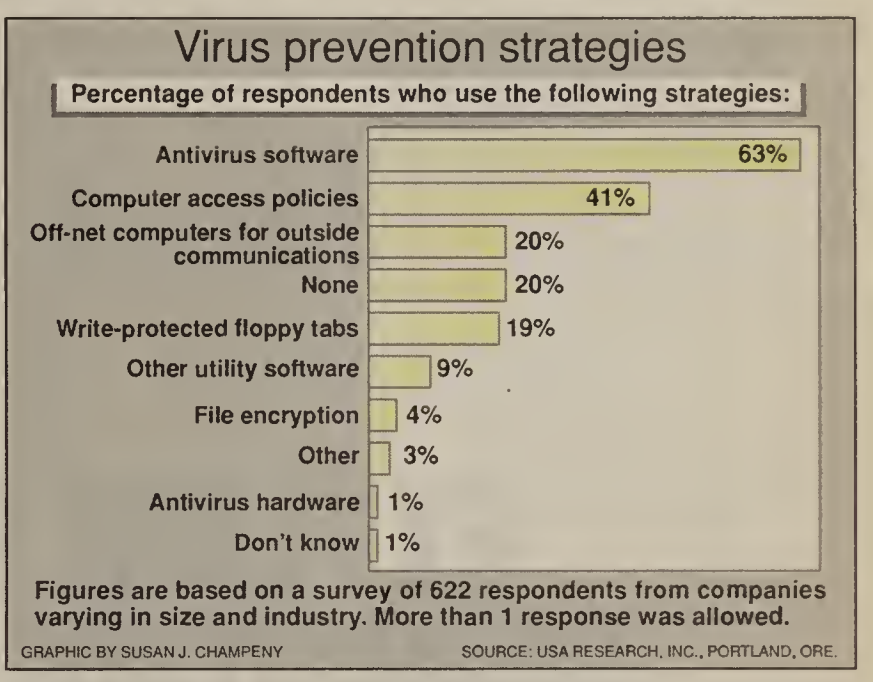

Firm's LAN tools gain antivirus safety net

Could signal the beginning of a trend to include detection capabilities in ordinary net products.

By Caryn Gillooly
Senior Editor

EAST HANOVER, N.J. — In what may be the beginning of a trend in virus protection, Safetynet, Inc. this week is expected to announce it will build antivirus capabilities into its existing LAN networking tools.

Later this month, the company, based here, will also introduce a local-area network inventory product with inherent antivirus capabilities and will begin selling those abilities as a separate software package called VirusNet.

Neither the product nor the capabilities themselves are new. In fact, Steven Gordon, president of Safetynet, said VirusNet is a repackaged, renamed version of an existing antivirus software product, although he declined to say which one.

However, Safetynet's plans to include virus protection software in ordinary networking products is fairly cutting edge.

Some companies have taken similar tacks. For example, Hilgraeve, Inc.'s recently announced HyperAccess/5 Version 2.1 asynchronous communications software can detect viruses on files while they are being transferred across systems. The product also has the ability to halt the transfer if a virus is detected ("Firm bolsters HyperAccess with more speed, security," *NW*, March 9).

Safetynet, however, is including virus detection capabilities in all its products, including the firm's StopLight access control software, Drive-In Menu software menuing product and ProfileNet, a yet to be announced LAN inventory product.

"The LAN menuing system product, in addition to menuing, will now automatically detect and eliminate viruses," Gordon said.

He added that the company does not plan to raise prices of its products after adding the features.

"The LAN menuing system product will now automatically detect and eliminate viruses."

▲▲▲

The virus hunter

The core virus hunting element, the basis of the new VirusNet product, is a software-based scanner that is designed to detect more than 1,100 viruses and virus strains on floppy disks, hard drives and network drives.

When implemented on either a network server in a LAN environment or on individual personal computers, VirusNet checks ev-

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Firm's LAN tools gain antivirus safety net

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ery program for viruses before it is run. If a virus is detected, the program is prevented from running and the name of the virus is displayed on the user's screen.

VirusNet can then either delete the virus or the infected program if it is unrecoverable.

According to Gordon, VirusNet occupies about 8K bytes of random-access memory on the workstation and has the ability to load itself into high memory if such an option is available.

Because new viruses are constantly being launched, Safetynet will provide quarterly updates for registered VirusNet users. The company will also provide updates for viruses that pose immediate threats, such as the recent Michelangelo scare.

Safetynet's ProfileNet product, a LAN-based inventory software package, will automatically inventory all hardware and software on a network and store the information in a central database when ProfileNet is loaded onto the network server.

Helpful integration

"I think it would be very helpful to have the [antivirus] capabilities bundled with the menu [or inventory] system," said Juan Velez, network administrator at a branch office of Arlington, Va.-based American Management Systems, Inc.

Because so many companies already have the antivirus software and most also have menuing or inventory tools, it makes sense to combine those capabilities into one product, he said.

According to a recent study by USA Research, Inc., almost 65% of network administrators from all types of companies use antivirus software to guard against viruses (see graphic, page 11).

VirusNet, which will be available this week, will cost $495 per server or $49 per PC. ProfileNet, which is due at the beginning of next month, will cost $195 for a 10-user pack.

ProfileNet, along with the company's other products, are network operating system-independent.

SunSoft kit to ease development

continued from page 11

velopers to recompile their code for each network transport protocol that their application uses. Instead, applications are compiled once to use a single platform and many different protocols. If more protocols are added, the application will not need to be recompiled, according to Sun.

Applications developed with the kit will be backward-compatible with existing applications that use the remote procedure call as it existed in the Sun operating system before it became known as Solaris 1.0. The kit will work with the next release of Solaris, Version 2.0, which the firm has said will eventually run on Intel Corp.-based computers and its SPARCstations.

Available now at a cost of $1,000, the ONC RPC Application Toolkit will also allow developers to take advantage of extensions that offer asynchronous communications, callback, authentication, audit trails and data compression.

Pack offers SNMP support for Macs

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standards enter public domain," *NW*, March 9).

"MIB I was very basic and aimed mostly at routers," said Brian Lichorowic, InterCon's director of marketing. "MIB II lets managers gather a wider variety of information about Macs themselves."

For example, when MIB II receives final approval, it will be able to tell a central management console which type of processor, how much random-access memory or which internal cards are installed on a Macintosh. Customizable fields allow managers to attach other information to a computer's profile that SNMP agents cannot typically retrieve, such as a serial number.

Both agents will work with any standard TCP/IP-based SNMP management system, including SunConnect's SunNet Manager, Hewlett-Packard Co.'s OpenView and WatchTower, InterCon's own $2,495 SNMP management system — the first SNMP management system ever to run on the Macintosh, according to the company.

TCP/Connect II also offers an updated text editor for creating messages or news postings. The editor features an improved interface and supports large files.

The package's news reading utility now lets users view and select from as many as 15,000 news groups in alphabetical order, and the terminal emulator operates up to 20% faster, according to the company.

Worth Noting

"No router, including IBM's 6611, can do SNA routing. If you hear otherwise, you're having an out-of-body experience."

Anura Guruge
Lead consultant
BBN Communications Corp.
Cambridge, Mass.

Link Notes

Cisco Systems, Inc. last week announced the availability of software that will enable its routers to establish switched digital connections at speeds up to 4M bit/sec.

The new feature, dubbed dial-on-demand, is compatible with standard dial-up telephone lines, Integrated Services Digital Network or high-speed switched digital services provided by the interexchange carriers. This new capability will be available next month.

Cisco also announced two hardware modules to boost IBM internetworking performance on its bridge/routers.

The CSC/2R Dual Token Ring Card, configurable for 4M and 16M bit/sec token rings, lets users connect twice as many token-ring local-area networks with a single router and supports the vendor's Phase III software features, including Synchronous Data Link Control-to-token ring media conversion and local acknowledgment of token-ring 802.2 Logical Link Control 2 sessions. The card costs $9,000 and will be available next month.

The CSC/4 Processor Card, based on a 25-MHz MC68040, includes 16M bytes of dynamic random-access memory to provide the added processing power required to run the encapsulation and conversion-oriented features found in the Phase III software.

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SynOptics announces LAN management applications

Intros traffic simulator, enhances others wares.

By Joanne Cummings
Staff Writer

SANTA CLARA, Calif. — SynOptics Communications, Inc. recently unveiled a set of third-party LAN management applications that tap the power of its Reduced Instruction Set Computing (RISC)-based LattisNet Network Control Engine (NCE).

The applications, which include a new traffic simulator and enhancements to the company's protocol analyzer and load monitor, are designed to offer users more detailed information about local-area network traffic and performance, easing management of complex LANs, according to Bill Lanfri, vice-president of marketing for SynOptics.

The new applications, developed for SynOptics by Metrix Network Systems, Inc., run on NCE and are X Window System-based. The NCE is based on a RISC scalable processor architecture processor that resides in SynOptics' LattisNet System 3000 intelligent hub. The module gathers data about Ethernet, token-ring or Fiber Distributed Data Interface LANs and forwards it to a central network management station.

The new NetMetrix Traffic Generator enables net administrators to optimize LANs for performance by simulating net traffic using any bandwidth, protocol, packet size, net destination and packet content. The module comes with predefined templates for testing popular protocols, such as Novell, Inc.'s Internetwork Packet Exchange (IPX).

SynOptics also unveiled enhancements to the NetMetrix Protocol Analyzer, which is software that captures individual packets, disassembles them and displays the results graphically on any X Window terminal. This allows net managers to detect nodes generating excessive packets and debug protocols.

The upgraded analyzer can now automatically decode packets from Apple Computer, Inc. AppleTalk, Digital Equipment Corp. DECnet and IBM Network Basic I/O System, as well as IPX and Xerox Corp. Xerox Network Systems. Previously, the analyzer was only able to decode Transmission Control Protocol/Inter-

(continued on page 14)

Compression unit boosts throughput

By Maureen Molloy
Staff Writer

HANNOVER, Germany — Magnalink Communications Corp. will announce at Hannover Fair CeBIT today a data compression device for internetwork equipment that lowers bandwidth consumption and reduces wide-area circuit costs.

By compressing data, the Series 5000 LAN/WAN Optimizers can increase the throughput of a bridge, router or gateway from two to six times, depending on the type of information being transmitted. It also eases congestion and provides users with better response times when accessing remote applications.

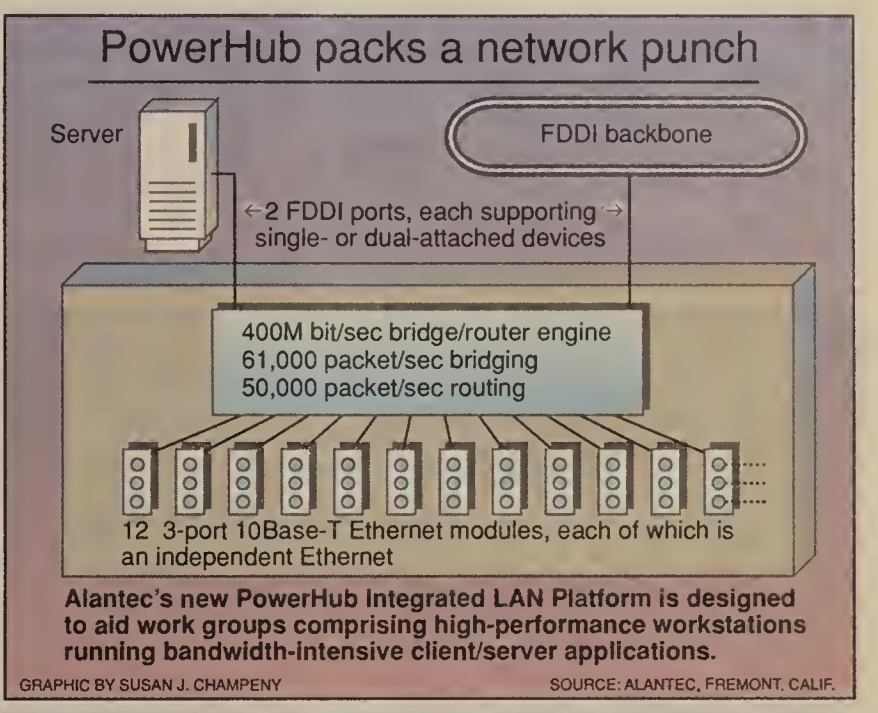
Previously, when the wide-area internetworking links became congested, the user had to either purchase additional bandwidth or redesign the network, which can be disruptive.

The LAN/WAN Optimizer sits between a bridge, router or gateway and a data service unit/channel service unit (DSU/CSU) and is linked to each via a V.35 port. Models with built-in DSU/CSUs will be available in a future release and connect directly to T-1 and fractional T-1 lines.

The Optimizer will also include an automatic error correction capability that eliminates protocol time-outs and the need to retransmit messages due to line errors. It will also feature automatic dial backup links and use the same compression technology orginally developed for Magnalink's line of compression bridges.

Models range in price from $5,000 to $8,000 and will be available in May.

The products will also be demonstrated at INTEROP 92 Spring in Washington, D.C. the same month.



Alantec's new PowerHub Integrated LAN Platform is designed to aid work groups comprising high-performance workstations running bandwidth-intensive client/server applications.

GRAPHIC BY SUSAN J. CHAMPENY — SOURCE: ALANTEC, FREMONT, CALIF.

Alantec powers hub to free up bandwidth

Company's intelligent hub is a boon for users that need to support bandwidth-hungry applications.

By Maureen Molloy
Staff Writer

FREMONT, Calif. — An intelligent hub from Alantec that integrates 10Base-T hubbing, multiport internetworking and FDDI links is helping users overcome the bandwidth crunch that results when interconnecting high-performance workstations.

The company has announced the PowerHub Integrated LAN Platform, a 10Base-T hub designed for work groups running bandwidth-hungry applications. The PowerHub can support as many as 12 three-port 10Base-T modules, each of which is an Ethernet itself.

That means the 10M bit/sec Ethernet speed is shared between relatively few devices, ensuring high-bandwidth availability.

> The PowerHub can support as many as 12 three-port 10Base-T modules.
>
> ▲▲▲

Typical 10Base-T hubs let all attached workstations contend for the 10M bit/sec bandwidth.

The architecture of the hub, which essentially creates multiple, small Ethernet segments, will help users deal with the surge in Reduced Instruction Set Computing-based workstations running bandwidth-intensive applications. A small group of these devices can easily saturate an Ethernet when running applications such as computer-aided design, image processing or multimedia.

> Typical 10Base-T hubs let attached workstations contend for the bandwidth.
>
> ▲▲▲

While users typically segment local-area networks by installing more hubs, bridges or routers, such methods are usually costly and, in many cases, provide only a temporary solution. The newly segmented LAN can satisfy needs until more nodes are added and traffic again begins to bog down. More hubs, bridges and routers would then have to be added to further segment the LAN.

"In many cases, users have deployed a combination of 10Base-T hubs and multiport routers to service their bandwidth require-

(continued on page 14)

Alantec hub frees bandwidth

continued from page 13

ments," said Paul DePond, Alantec's vice-president of marketing. "This is an expensive form of segmentation."

Michael Coxe, a systems manager at IIaL Computer Systems, Inc. in Campbell, Calif., was one such user. Coxe initially used a Sun Microsystems, Inc. SPARCserver as a router/gateway when he began segmenting his network of more than 200 workstations last year.

"There was a lot of routing going on between the subnets, [and the resulting traffic load] started beating the heck out of the network," Coxe said. "Having the server act as both a server and gateway only went so far. We chose the PowerHub because it provides a good, cost-effective solution to users with a lot of traffic, especially with the faster workstations coming out."

In addition to multiplying work group bandwidth, Coxe is using the PowerHub as a front-end processor to off-load the router function from the server. The hub also lets him leverage his existing investment in 10Base-T.

The hub integrates Ethernet, Fiber Distributed Data Interface, multiport bridging and routing, and network management into a single chassis.

Additionally, the hub has a 400M bit/sec backplane and 12 Ethernet segments that can each support as many as three 10Base-T links to workstations. It is also equipped with two FDDI ports, each of which can be configured to support a single- or dual-attached device, such as a work group server or an FDDI backbone (see graphic, page 13).

The result is a work group hub that can deliver up to 12 times the bandwidth of a typical 10Base-T hub and throughput of more than 50,000 packet/sec when routing Transmission Control Protocol/Internet Protocol traffic.

The hub is currently available with either 12 or 36 10Base-T workstation connections costing $16,800 and $18,880, respectively. The FDDI modules will be available by the end of next month and will cost between $9,000 and $11,000, depending on configuration.

Firm announces applications

continued from page 13

net Protocol and Network File System packets.

The analyzer now comes with a developer's tool kit that allows users to customize their protocol decodes to suit a particular environment.

SynOptics also unveiled an enhancement to its NetMetrix Load Monitor. The software now offers an enhanced Zoom feature that enables net administrators at any X Window terminal to view LAN traffic statistics by time interval, source nodes, destination nodes, applications or protocols.

For example, it could show when the peak traffic load occurs and make it possible to not only zoom in and identify the protocol used to carry the most traffic at that time, but also zoom in further to pinpoint the LAN node generating the most traffic using that protocol. It then presents the information graphically on the same screen and allows users to view the statistics at a glance.

The applications are each priced at $1,995 and will be available from SynOptics by the end of the month. The NCE costs $9,995.

Link Notes

continued from page 13

The card costs $6,500 and will be available next month.

Proteon, Inc. last week announced that the frame relay interface for its bridge/routers has successfully completed certification testing with StrataCom, Inc.'s IPX Cell Relay T1/E1 Switch and Netrix Corp.'s #1-ISS circuit/packet switch.

The company also completed tests with Motorola Codex, which resells the IPX, and WilTel, which uses the IPX in its frame relay service offering.

Proteon's frame relay implementation, available on its CNX 500 and p4100+ bridge/routers, includes congestion control for increased network availability and circuit access control for enhanced network security.

Telecom/MIS Managers Invited!

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McCormick Place
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Explore new gateways to knowledge as SUPERCOMM once again co-locates with the International Conference on Communications (ICC) – this year in Chicago at McCormick Place. This world-class exhibition and two premier conferences promise to be even more exciting, informative and global than ever before!

Don't miss your chance to hear the industry's top leaders. Attend dozens of informative seminars that will help your organization … and enhance your career. And get a hands-on view of the directions telecommunications will take in the future.

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How To Plan For The Telecommunications Event Of The Year

With three series of programming ranging from non-technical to technical, as well as the world's largest annual telecommunications exhibition, deciding what to see and do will be an exciting challenge! You'll be able to choose from the following:

Free Exhibits Tuesday – Thursday No Exhibits Monday

Because exhibit space has grown dramatically and is selling out earlier than ever, you'll be able to walk through more than 400,000 square feet of high-tech displays and see hundreds of new product demonstrations.

Three Valuable Feature Presentations – All Free – To Start Your Days

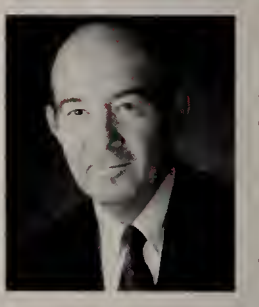
ICC '92 Vice Chairman Frank Splitt of Northern Telecom opens Monday morning with international panelists Theodor Irmer, Director of CCITT and Enrique Used Aznar, Chairman of Telefonica International. Discussion focuses on the changing world of international telecommunications and standards, exploring this year's overall theme: "Discovering a New World of Communications."

Tuesday morning, keynote speaker and Motorola Chairman George Fisher discusses "Learning to Compete in a Market-Driven Wireless World." As a driving force behind Motorola's success in wireless communications, Fisher will tell you what you need to know about wireless and how it will affect you.

Motorola Chairman George Fisher

The Wednesday morning Opening Session will highlight the role of telecommunications in education. Watch for more details in future brochures.

Major Addresses At ICC '92 Luncheon On Monday And Banquet On Tuesday



On Monday the ICC '92 Awards Luncheon will feature William L. Weiss, Chairman and CEO of Ameritech, providing insight on building an information society.

ICC '92 fee applies.

The ICC Annual Banquet on Tuesday night will be addressed by George Heilmeier, the new President and CEO of Bell Communications Research. Bellcore provides research and other technical support to the Bell Regional Holding Companies, Cincinnati Bell Telephone Co. and Southern New England Telephone Co.

ICC '92 fee applies.

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200 Series Also, approximately two dozen applications-oriented sessions are targeted to SUPERCOMM attendees by ICC '92. This practical and inexpensive programming will be most valuable to telcos, interexchange carriers, and telecommunications professionals from both public and private networks who need a somewhat technical viewpoint.

300 Series In addition, there will be more than 50 moderately priced ICC '92 technical sessions sponsored by the Communications Society of The Institute of Electrical and Electronics Engineers.

400 Series For technically-oriented professionals seeking an overview, ICC '92 also offers eight full-day and half-day tutorials and workshops.

SUPERCOMM Program Participation By A Wide Variety Of Organizations

From the Association of Data Communications Users to the Pacific Telecommunications Council and the Caribbean Telecommunications Council, leading organizations will conduct SUPERCOMM '92 seminars and bring you cutting-edge presentations. From the editors of *Communications Week* and *Communications News* to *TE&M*, *Telephony*, and *Network World*, you'll learn about the leading issues in your industry.

SUPERCOMM And ICC

Together offering you all the technical, non-technical and hands-on information you need to understand the telecommunications world of today and tomorrow.

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Counterpart Business Matching Service will match and schedule companies for private one-on-one meetings at SUPERCOMM. Participating companies may choose the companies and the countries for the meetings. Meetings help SUPERCOMM companies expand sales, establish distributorships, or develop joint ventures in the U.S. or internationally. For more information and *Counterpart* registration forms, please contact Dr. Noreene Janus, Executive Vice President, *Counterpart*. Phone: (703) 524-8704, Fax: (703) 524-8705.

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(No exhibits on Monday, June 15)

Exhibit Hours:	**Monday** No Exhibits	**Tuesday** 9 a.m. – 5 p.m.

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■ **Primer**

8:00 – 9:00 a.m.
International Panel by ICC '92
9:30 - 10:45 a.m.
■**101** Synchronous Optical Networks – An Update
102 Developing European Digital Cellular Market
103 Evolving Information Environment – User Needs
11:00 a.m. - 12:15 p.m.
104 Applications and Implementations of SONET
105 Report Card on Investments in International Telecommunications
106 User Benefits/New Public Network Architectures
2:00 - 3:15 p.m.
■**107** The Basics of CCS/SS7
108 Opportunities in the Asia/Pacific Telecommunications Market
109 User Management of New Public Network Services
3:30 - 4:45 p.m.
110 Harmonious Hybrids in the '90s
111 The Caribbean – Telecom Growth Market
3:30 - 5:15 p.m.
112 HDSL: COPPER Value Just Went Up!

8:00 – 9:00 a.m.
Joint Plenary Session/Keynote Address
9:30 - 10:45 a.m.
113 Numbering Resources: Will We Run Out?
114 Where Will PCS & Cellular Meet in the Market?
115 Managing Growth in Evolving Public Network
11:00 a.m. - 12:15 p.m.
116 Exploring Transition to Competition
117 Information Services: Retail On-Line Transaction Processing
118 Money Matters: Fiber in the Loop – Part I
2:00 - 3:15 p.m.
119 Planning Considerations for CCS/SS7
■**120** Introduction to Fast-Packet Switching – Part I
121 New for '92: User Applications of ISDN
3:30 - 4:45 p.m.
122 Access Restructure – What's at Play for Small Companies?
123 Video Customer Premise Equipment
■**124** Introduction to Fast-Packet Switching – Part II

Grouped in three technical levels, the following are offered by ICC '92:

200 Level

For Everyone

9:30 a.m. - 12:15 p.m.
201 ISDN Services
202 FTTH – Network Migration Strategies
2:00 - 3:15 p.m.
203 ISDN Update
204 Key Issues for FITL Systems
3:30 - 4:45 p.m.
205 Near-Term IN Services
206 Quality Issues in Network Operations and Management

9:30 - 10:45 a.m.
207 Network Update: The Digital Transition
208 Technology Management
11:00 a.m. - 12:15 p.m.
209 SONET – Impact on the Network
210 Radio Access
2:00 - 3:15 p.m.
211 New Network Applications
212 PCS Network Evolution
3:30 - 4:45 p.m.
213 Private Digital Radio Networks
214 Advances in DLC Systems

300 Level

ICC Sessions

9:00 a.m. - 12 noon
301 Performance Analysis of Data Protocols
302 Technology Issues of Wireless Communications
303 Voice Technology Advances – Public/Private
304 Combining Radio and Fiber
305 Signal Processing for Digital Storage Systems
306 Packet Switching
307 Self-Healing Networks and Integrated Network Management
308 Management of High-Speed LAN/WAN Nets
309 Personalized TV
310 CDMA for Personal & Mobile Communications
2:00 - 5:00 p.m.
311 ATM Switching and Broadband Networking
312 Digital Cellular and Microcellular Systems
313 Application of Signal Processing in Coding
314 Communications Satellite Technologies
315 Queueing Performance of Data Networks
316 Network Survivability Performance
317 Specification Technologies for Software
318 Quality Management for Customer Satisfaction
319 Radio Design Techniques and Algorithms for Personal Communications
320 A Queueing Models for Data Communication Networks
320 B Advances in Video and Image Processing

9:00 a.m. - 12 noon
321 Emerging IN: Transition & Implementation Issues
322 Impact of Multimedia Services on Protocols
323 Modulation and Coding I
324 Performance Enhancement in PCS Radio
325 Dimensioning/Control of ATM Networks I
326 High-Speed Transmission Technology
327 Global Information Architecture
328 Land Mobile Satellite Communication Techniques
329 Adaptive Filtering in Pulse Shaping & ISDN
330 Photonic Switching and Interconnects
2:00 - 5:00 p.m.
331 PCN Radio Systems Engineering
332 Progress in Broadband Switching Systems
333 Modulation and Coding II
334 High-Speed Protocols
335 A Dimensioning/Control of ATM Networks II
335 B Network Control and Service Management in ATM Networks
336 Issues in Wireless Communication Networks
337 A Propagation Effects in Satellite Communications
337 B Multimedia Communications for Cooperative Applications
338 High-Speed MANs
339 Customer Evaluations

400 Level

ICC Tutorials And Workshops*

9:00 a.m. - 5:00 p.m.
401 Tutorial #1 Broadband Networking
9:00 a.m. - 12 noon
404 Tutorial #5 Telecommunications Management Network: Principles, Models and Applications
2:00 - 5:00 p.m.
405 Tutorial #6 Signalling System Number 7 for Fixed and Mobile Networks
12:15 – 1:45 p.m.
Awards Luncheon

9:00 a.m. - 5:00 p.m.
402 Tutorial #2 Broadband Services and Industrial Applications
9:00 a.m. - 12:30 p.m.
407 Workshop #1 Network Synchronization
2:00 - 5:00 p.m.
408 Workshop #2 Technology Management: A Shifting Paradigm
6:00 p.m.
Conference Banquet

** For technically-oriented professionals seeking an overview. Register early – space is limited.*

Wednesday
9 a.m. - 5 p.m.

8:00 – 9:15 a.m.
General Session
9:30 - 10:45 a.m.
125 The Basics of IN/AIN
126 The Ameritech PCS Trial
127 Distance Learning: Minds Across Miles
11:00 a.m. - 12:15 p.m.
128 Accelerated Modernization of Infrastructure and Economic Benefits
129 Delivering Enhanced Services to the Customer
130 Looking Ahead: Fiber in the Loop – Part II
2:00 - 3:15 p.m.
131 800 Number Portability
132 National Network Billing Services
133 New International Services for Corporate Users
3:30 - 4:45 p.m.
134 Infrastructure Sharing – Services for Small Companies
135 Dial-up Videoconferencing/When a Reality?
3:30 - 5:15 p.m.
136 Auto. Message Accounting Modernization

9:30 - 10:45 a.m.
215 Broadband ATM/STM Network Dpportunities
9:30 a.m. - 12:15 p.m.
216 Significant Telecom Technology Standards
11:00 a.m. - 12:15 p.m.
217 Broadband Nets & Systems Experiments/Trials
2:00 - 3:15 p.m.
218 Architectures for Enhanced Services Platforms
219 Expert Systems in Telecom's Real Experiences
3:30 - 4:45 p.m.
220 Capturing Cellular Data Markets
221 Mass Market Telecom Services

9:30 a.m. - 12:30 p.m.
340 Photonic Networks I
341 Congestion Control & Routing in High-Speed Networks
342 Wireless Local Area Networks
343 Neural Network Techniques: Adaptive Filtering
344 Analysis & Design: Communications Systems
345 A Mobile Communication Networks
345 B Packet Radio Networks
346 Coding for Digital Storage Systems
347 Advanced Technologies in Management of Transport Networks
348 Advances in Data Communications
2:00 - 5:00 p.m.
349 Photonic Networks II
350 Advanced Techniques for Terrestrial Digital Radio
351 Adaptive Equalization of Time Dispersive Channels
352 AI Applications in Telecommunications
353 Digital Signal Processing for Satellite and Space Communications
354 Advances in ATM Switching
355 Global Quest for Quality
356 PCSs and Their Implementation

9:30 a.m. - 5:00 p.m.
403 Tutorial #3 Spread Spectrum Systems: Techniques and Applications
406 Tutorial #4 Satellite ISDN: Architectures, Technology and Applications

Thursday
9 a.m. - 3 p.m.

8:00 – 9:15 a.m.
137 Q&A for Small Telcos on Implementing Equal Access
9:30 - 10:45 a.m.
138 Perspectives on Advanced Intelligent Network
139 Wireless Data Communications – Taking Users Into the Future
140 Competitive Alternatives to the Local Loop
11:00 a.m. - 12:15 p.m.
141 Where the Rubber Meets the Road: Successful National ISDN Deployment
142 A User's View of Voice Processing Today
143 Preventing Network Outages

Please Note: Schedule Subject to Change

ICC Feature Sessions
(Free of Charge)

#318:
Quality Management for Customer Satisfaction
Monday, 2:00 - 5:00 p.m.

#327:
Global Information Architecture
Tuesday, 9:00 a.m. - 12 noon

Gigabit Networking Workshop
Tuesday & Wednesday
8:30 a.m. -- 2:00 p.m.
(Fee Required)
For more info, see back cover.

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We want to make your comfort our priority. But we need your help. Please write in the SUPERCOMM '92 and ICC '92 session numbers or other events you plan to attend, so we can make the best use of the available meeting space. Return to Henry Wieland, Executive Director – Special Events, USTA, 900 19th Street, NW, Suite 800, Washington, D.C. USA 20006-2190. Fax: (202) 835-3248. Thank you!

_____ _____ _____
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Locator/Hotel Map

1 The Bismark Hotel
2 The Blackstone Hotel
3 Chicago Hilton & Towers: ICC '92 HQ
4 The Congress Hotel
5 Days Inn
6 The Drake
7 Embassy Suites
8 Essex Inn
9 Executive House
10 Forum Hotel
11 Grant Park Hotel
12 Guest Quarters
13 Holiday Inn City Centre
14 Holiday Inn Mart Plaza
15 Hotel Intercontinental
16 Hotel Nikko
17 Inn of Chicago
18 The Knickerbocker
19 The Lenox House
20 The Marriott
21 McCormick Center
22 The Oxford House
23 Palmer House Hilton
24 Ramada, Lake Shore
25 The Richmont Hotel
26 Sheraton Chicago
27 Sheraton Plaza
28 Stouffer Riviere
29 The Tremont

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A hotel deposit is required for each hotel room/suite requested. The deposit must be submitted with the Official Housing/Registration Form. Forms are date-stamped and processed on a first-come, first-serve basis. All rooms must have a deposit in the amount of one night's lodging. The deposit may be in the form of a major credit card or a check payable to "Rogal America, Inc." (The Oxford House accepts only a check or money order as deposit.)

Registration Deadlines

The SUPERCOMM '92 deadline is May 15, 1992. After this date, registrations for SUPERCOMM will not be honored, and you will not receive your badge by mail. Please register on site. ICC '92 registration will be accepted until one week before the conference. Housing will be available on a space available basis.

SUPERCOMM '92 Registration

For SUPERCOMM '92 only, fill in the registration and housing information and mail with hotel deposit. Badges will be mailed (USA and Canadian addresses only) to all SUPERCOMM attendees, so please provide the complete correct mailing address for each registrant. You will receive your badge approximately 2 weeks prior to the show. If you do not receive your badge, please register on site.

Foreign badges will not be mailed. Please pick up your badge at the McCormick Place registration booth.

ICC '92 Registration

To register for ICC '92 sessions, please fill in the ICC '92 Registration Fees section in addition to the housing/registration information. Please include a check or payment for the ICC '92 sessions. Make checks payable to ICC '92. Important: If paying by check, separate checks for housing and registration fees must be sent. Payment in U.S. dollars only.

Discount Airline And Car Rental Information

American Airlines is designated as the SUPERCOMM '92 and ICC '92 preferred airline. To book your reservations, please contact Himmel & Associates at 1-800-328-6898 and identify yourself as an attendee. Reduced airfares are offered on most airlines, so call early. If calling from overseas, (312) 236-6470; from Canada, 1-800-621-2386; or fax your travel request to (312) 236-0377.

Please support the SUPERCOMM and ICC programs by allowing Himmel & Associates to handle your travel arrangements. By doing so you will help our programs, and be eligible to win two free tickets in the continental U.S.

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	Hotel	units	single	double
1	The Bismarck Hotel 171 W. Randolph Street	150	$75	$ 86
2	The Blackstone Hotel Michigan Ave. at Balbo	200	$ 99	$109
3	**Chicago Hilton & Towers** 720 S. Michigan Ave. **(ICC '92 Headquarters Hotel)**	1000	$140 $205	$165 $230
4	The Congress Hotel 520 S. Michigan Ave.	150	$ 95	$105
5	Days Inn 644 N. Lake Shore Drive	150	$ 99	$109
6	The Drake 140 E. Walton Place	150	$175	$210
7	Embassy Suites 600 N. State Street	100	$155	$155
8	Essex Inn 800 S. Michigan Avenue	200	$ 92 $106	$102 $112
9	Executive House 71 E. Wacker Drive	250	$120	$135
10	Forum Hotel 525 N. Michigan Ave.	300	$153	$168
11	Grant Park Hotel (Best Western) 1100 S. Michigan Ave.	150	$ 80	
12	Guest Quarters 198 E. Delaware Place	150	$160	$185
13	Holiday Inn Chicago City Centre 300 E. Ohio Street	200	$128	$144
14	Holiday Inn Mart Plaza 350 N. Orleans Street	200	$112	$125

	Hotel	units	single	double
15	Hotel Intercontinental 505 N. Michigan Ave.	200	$210	$231
16	Hotel Nikko 320 N. Dearborn	200	$185	$200
17	Inn of Chicago 162 E. Ohio at Michigan Ave.	200	$108	$116
18	The Knickerbocker Walton Place at Michigan Ave.	100	$155	$177
19	The Lenox House 616 N. Rush Street	100	$ 99	$109
20	The Marriott 540 N. Michigan Ave.	800	$161	$181
21	McCormick Center Hotel Lake Shore at 23rd Street	500	$109 $159	$129 $179
22	The Oxford House 225 N. Wabash	100	$ 85	$ 95
23	Palmer House Hilton 17 E. Monroe Street	900	$119	$119
24	Ramada, Lake Shore 4900 S. Lake Shore Drive	150	$ 79	$ 89
25	The Richmont Hotel 162 E. Ontario Street	100	$115	$127
26	Sheraton Chicago 301 E. North Water Street	700	$163 $191	$191 $219
27	Sheraton Plaza 160 E. Huron	150	$149	$169
28	Stouffer Riviere One W. Wacker Dr.	285	$170	$170
29	The Tremont 100 E. Chestnut St.	50	$149	$159

Advance Registration/Housing Form

(Whether or not you use hotel accommodations, you need to fill out this form)

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Industry Affiliation _____ (Use number from #1 below)

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Name of Spouse/
Guest for Badge _____
First Last

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HOTEL PREFERENCE

First Choice _____

Second Choice _____

Third Choice _____

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Hotel Room Type Requested (Single or Double) _____

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Choose ONE category that best describes your Industry Affiliation. (Also enter on form above under your address.)

Exchange Carriers/Subsidiaries
10 Bell Holding Companies
11 Bell Operating Companies
12 Independent Holding Companies
13 Independent Operating Companies
14 Foreign Telcos

Non-Operating Telco Subsidiaries
15 Bell
16 Independent

Other Carriers
17 Long Distance
18 International
19 Mobile/Cellular
20 CATV/Radio/TV

Other Telecom Providers
21 Telecom Manufacturers
22 Dealers & Distributors
23 Contractors & Electrical Services
24 Consultants & Architects
25 Financial & Leasing Companies
26 Data Communications Equipment Manufacturers
27 Data Communications Services
28 Telecommunications Associations

Telecom Users
29 Educational
30 Financial/Investment
31 Hospitals/Health Care
32 Hotel/Motel
33 Legal/Insurance/Real Estate
34 Publishing
37 Research & Development
38 Stadiums/Convention Centers
39 Trade (Wholesale/Retail)
40 Transportation/Pipelines
41 Utilities (Gas/Water/Electric)

Government
42 Government/Regulatory
43 Military
44 Foreign

Other
46 Press
50 Spouse/Child (non-industry)
51 Other

2. PROFESSIONAL RESPONSIBILITY

Choose ONE that best describes your professional responsibility. (Also enter on form above under your address.)

A Corporate/Administration
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D Engineering
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Worth Noting

The worldwide revenues of U.S. value-added network providers will increase from $1.15 billion this year to $1.91 billion in 1996, according to a recent report by International Data Corp., a Framingham, Mass., research firm.

Regulatory Update

The General Accounting Office (GAO) last week said Congress should stick to the status quo for now and renew the mandatory use provision of Federal Telecommunications System (FTS) 2000, which requires all federal agencies to purchase service from the contract.

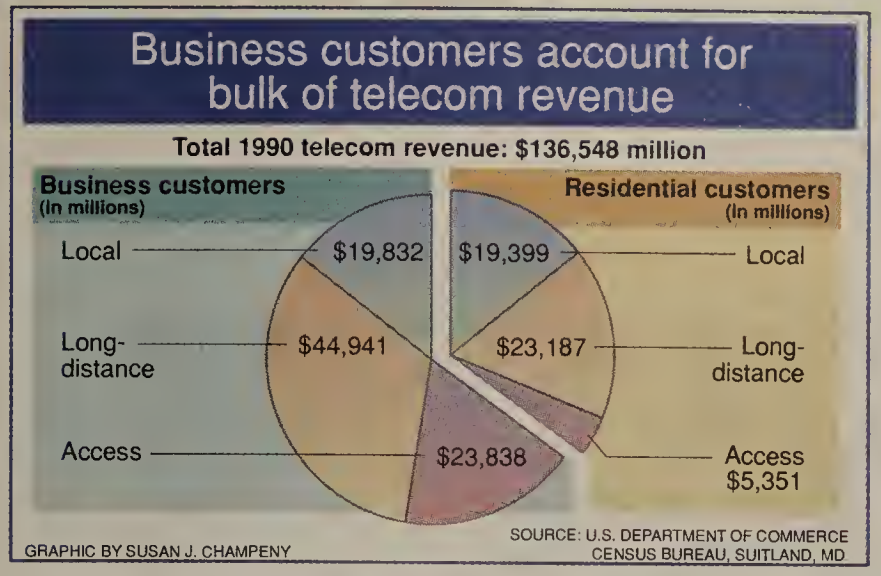
The GAO said in a letter that it would be too risky to drop the requirement now because the two FTS 2000 vendors — AT&T and Sprint Corp. — are currently renegotiating prices.

"We believe that attempts to change the mandatory use provision of the [FTS 2000] contracts at this critical juncture could seriously disrupt the price redetermination process and jeopardize GSA's efforts to obtain favorable prices," the GAO letter stated.

The GAO looked into the matter at the request of Rep. Edward Roybal (D-Calif.), who asked the agency to investigate whether the mandatory use provision should be continued.

Each year, the provision has to be reintroduced in appropriations language.

Mandatory use has been controversial because some federal users claim they are being overcharged and cannot buy all the services they need under FTS 2000.



Rolm unveils call center service, product package

RolmCenter offerings cover design to operation.

By Bob Wallace
Senior Editor

NORWALK, Conn. — Rolm Co. recently announced a package of call center design, installation and project management services created to help users build new call centers or improve the efficiency of existing ones.

The RolmCenter package comprises Applications Services, Project Management Services and the full range of Rolm- and business partner-provided call center products.

"In the past, we had focused on selling users products for their call centers," said Jim Mackey, Rolm's director of applications. "Now we're selling complete packages that include professional services and products."

"Rolm is the first [automatic call distribution] vendor to offer a full suite of professional services," said Ian Angus, president of Angus TeleManagement Group, Inc., an Ajax, Ontario, telecommunications research and consulting firm, adding that Rolm lags behind some competitors in terms of ACD and other call center equipment.

Rolm is focusing marketing efforts on its current national accounts but will eventually include firms with as few as 10 call center agents.

With RolmCenter's Applications Services package, Rolm specialists help users decide what equipment to use in the call center — private branch exchanges, voice-messaging systems, voice-response units and host computers — and how to integrate it. It will also help users manage the call center, from training agents to measuring performance.

With RolmCenter's Project Management Services, the firm's specialists will manage implementation of a call center — from installation to training — including managing all vendors involved in the project.

Under RolmCenter's call center management services, Rolm serves as a single point of contact for problem resolution. RolmCenter also gives users for the first time a single point of contact for remote support of Rolm's CallBridge 9751 CBX-to-host software and associated computer and applications code.

Additionally, the company will provide support for its CallStat and CallDisplay products from a central site that can be reached via an 800 number.

CallStat software provides historical statistics that help managers schedule agents, while CallDisplay is used to monitor call center operations.

Both those products and CallBridge are among the list of wares Rolm provides to users under RolmCenter. Others include Phonemail, IBM's DirectTalk voice-response unit and switch-to-computer software for several IBM host computers.

Rolm prices Applications Services and Project Management Services on a user-by-user basis. The single point of contact for CallBridge costs $485 a month. CallStat's two modules combined cost $6,000 a year, and CallDisplay costs $900 a year.

Users that do not want a year's support can pay $115 an hour for CallBridge, CallDisplay or CallStat.

Bell Atlantic readies AIN-based services

Offerings will be the first in nation based on the new Advanced Intelligent Network architecture.

By Anita Taff
Washington Bureau Chief

BALTIMORE — Bell Atlantic Corp. last week said it will roll out two new services by year end and trial two others based on its Advanced Intelligent Network (AIN) platform.

The local carrier said two services — Area Wide Centrex and Switch Redirect — will be generally available by late in the third quarter and be the first commercial AIN-based offerings in the U.S. Bell Atlantic also said it will trial a new call management service for small users and a personal communications service (PCS) supported by AIN.

The announcement was made at the Wave '92 show, a regional technology showcase held here that was sponsored by Bell Atlantic.

AIN has been under development by the seven regional Bell holding companies since the late 1980s. The AIN architecture is designed to enable telephone companies to patch together different types of equipment — instead of having to buy equipment from one central office supplier — and off-load advanced functions to adjunct processors.

The idea is revolutionary because, in the past, software containing instructions for routing features, such as call forwarding, call waiting and three-way calling, resided in network switches. That meant that in order to create or modify a new service, software had to be added or changed in every one of the thousands of switches in a carrier's network. With AIN, new call-handling instructions can be provided to all switches on the network through a few Signal Control Points (SCP).

Bell Atlantic officials said that because of AIN, it can roll out new services quicker and at a lower price while providing a greater

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AT&T files third contract deal and a new Tariff 15

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — AT&T is plowing forward with custom network offerings with the filing of its third single-user contract deal and a new deal under its legally troubled Tariff 15.

AT&T's contract deal was filed late last month and is reportedly for GTE Corp. The contract covers Software-Defined Network (SDN), Pro WATS, Accunet Spectrum of Digital Services (ASDS), Accunet T1.5 and Dataphone Digital Services. Because the first contract filed by AT&T includes multiple services, the deal may blur the lines between Tariff 12 and Tariff 15.

AT&T's first contract deal was a discounted Megacom service geared toward resellers, and the second, reportedly designed for US West, Inc., offered a 40% discount on four T-3 lines. The Federal Communications Commission allowed both deals to take effect last month.

The carrier's new Tariff 15 deal was developed for ICN Corp., and offers a 15.4% discount on AT&T's Megacom service. The deal, filed in response to a similar offer from MCI Communications Corp., is the first Tariff 15 deal that AT&T has filed in almost eight months.

Tariff 15 has had a tortured legal history. Last August, the FCC rejected the first Tariff 15 deal and started a process that virtually guaranteed rejection of all Tariff 15 offers.

Last fall, AT&T went to court to rescue Tariff 15 from extinction, and last December, a federal appeals court told the FCC to stop rejecting any more deals. In January, the FCC voluntarily reopened an examination of Tariff 15 deals' legality.

Observers last week said both

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AT&T files contract deal, a new Tariff 15

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new deals could face legal hurdles. Critics have questioned whether contract and Tariff 15 deals allow AT&T to discriminate among customers, an action forbidden by the Communications Act of 1934.

For example, AT&T's new contract deal specifies that SDN traffic — the dominant service in the package — can originate from no more than 17 locations. That is similar to the geographic restrictions the carrier put in earlier Tariff 12s that raised questions of discrimination and caused the FCC to threaten rejection of the deals.

Some critics may also raise concerns that the contract package is tailored in such a way that only the original customer could possibly use it.

The contract includes a number of provisions likely to make it more difficult for additional customers to buy into the deal. Users must sign up for the four-year contract by June 15 and commit to 75 million minutes of SDN usage per year for the life of the contract.

Bell Atlantic readies AIN-based services

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degree of customization than ever.

"This is a revolution in service development," said Von McConnell, manager of service creation and assurance at Bell Atlantic. "You no longer have to wait years to create a new service."

During a press conference here, Bell Atlantic officials demonstrated that it is possible to develop a new service in minutes. The example was an offering that would intercept all incoming calls — except those originating from a user's home telephone — to a cellular phone and send them to voice mail.

Bell Atlantic's AIN platform consists of a designer's workstation built on IBM's RISC/6000 and an SCP designed by Bell Communications Research, the jointly owned research arm of the RBHCs.

AT&T and Ericsson also manufacture SCPs.

This year, the carrier will tariff Area Wide Centrex and Switch Redirect, which were both developed on and supported by Bell Atlantic's AIN platform. Area Wide Centrex allows customers to integrate Centrex services in different cities within the Bell Atlantic territory into a single network and use four-digit dialing and other features commonly associated with private branch exchanges.

Switch Redirect allows a user to redirect an unlimited number of calls from one group of phones to another. Barry Pershan, manager of the new service, said it was initially developed for customers requesting a disaster recovery service. With Switch Redirect, calls into a thousand phones can be rerouted to a thousand different phones at different locations.

In addition to the two commercial services, Bell Atlantic plans to trial two other services developed on its AIN platform. The first is a PCS wireless service that will be trialed in Pittsburgh later this year.

With PCS, individuals will be assigned a portable phone number rather than having numbers associated with a phone in a fixed location. One of the challenges is to be able to track users. Bell Atlantic's AIN system will screen calls placed on the network and route them to the user's location utilizing information stored in the AIN database.

One of the most interesting aspects of the trial is that Motorola is developing a new handset that allows users to place calls on traditional cellular or PCS systems. Such an integrated handset is seen by many as one of the keys to successful PCS offerings.

Bell Atlantic Mobile Systems will use radio frequencies in the 800-MHz band, which is much lower than most PCS trials that are conducted in the 1.8-GHz to 2.2-GHz range. The cellular carrier already has frequency assignments and will not need an experimental license from the Federal Communications Commission.

Mark Emery, director of AIN services planning at Bell Atlantic, said that by coupling AIN and resources from its cellular subsidiary, the carrier will be able to roll out a PCS service more quickly than other providers. More than 120 firms now have experimental licenses from the FCC to conduct PCS trials, but none have moved to a commercial service yet due in large part to unresolved regulatory and technology issues.

"I'm fairly sure that we will roll out PCS commercially next year," Emery said. "We see this as a huge winner for us."

The only drawback to Bell Atlantic's new PCS service is that it will not be compatible with other PCS services in the higher frequencies planned by carriers worldwide.

Another AIN service Bell Atlantic will trial is Call Management Service, which allows residential and small business users to tailor features of their phone service.

Worth Noting

"Even in the world of PC LANs — supposedly the quintessential platform for the client/server model — there is still more emphasis on file and print sharing than on building distributed applications."

Michael Millikin
Editor of the
"Client-Server Report"
Gunstock Hill Associates
Gilford, N.H.

Store & Forward

DB/Expo '92, one of the largest conference and expositions dedicated to databases and related tools, will run all next week at the Moscone Center in San Francisco. It will feature product announcements from Borland International, Inc., Gupta Technologies, Inc., Microsoft Corp. and others. Gupta will announce six products, including a new version of Quest, its database query tool. The company will also unveil a NetWare Loadable Module for its connectivity software so that Novell, Inc. file servers can act as database gateways providing access to data on other servers and hosts.

Hewlett-Packard Co. has been awarded a $4.2 million multiyear contract for equipment, software and services that will be used by the California Department of Corrections (CDC) to automate the tracking of 81,000 parolees. The contract calls for an Oracle Corp. relational database to be used on 40 HP 3000 Series 900 OA-RISC systems in 140 CDC offices statewide.

Dennis McEvoy, president and CEO of Cooperative Solutions

Lotus features animation with latest 1-2-3 release

Future versions will let users create animation.

By Barton Crockett
Senior Editor

CAMBRIDGE, Mass. — Ever wanted to watch a cartoon at work? If so, Lotus Development Corp. may have just the product for you.

Lotus, based here, last week announced a new version of 1-2-3 for Windows that features animated help capabilities explaining how to use the popular spreadsheet software. For example, the so-called Multimedia SmartHelp feature, which will be available in the second quarter, will show users how to create graphics on a 1-2-3 spreadsheet.

In addition, analysts said that by year end Lotus will roll out new versions of 1-2-3 that will enable users to create their own animated files. A user could, for example, use animation to graphically demonstrate sales growth over a 10-year period. Animation capabilities will be supported on a stand-alone basis or from a server on an IBM Network Basic I/O System local-area network, said Peter Smailis, a CDROM network products manager for Lotus.

Multimedia SmartHelp will be bundled with 1-2-3 on an optical disk that can be loaded on a CDROM disk drive attached to either a personal computer or LAN server.

Smailis said animation will be supported on a LAN by a new version of CD/Networker, a CDROM networking tool that Lotus unveiled last month.

CD/Networker is software that retrieves data from as many as 28 CDROM disk drives attached to a server and delivers them over the network to an end user.

The current version of CD/Networker is designed to only retrieve text files from CDROM disk drives. Smailis said that CD/Networker will be upgraded to deliver animated help to 1-2-3 users by the second quarter.

He declined to detail how CD/Networker will be upgraded. But Len Yencharis, proprietor of the Yencharis Consulting Group in Massapequa, N.Y., said Lotus will incorporate new compression features in CD/Networker that will enable it to to deliver eight to 10 image files per second from a server to a client.

That will be fast enough to support animated motion on a computer screen, although the animation may appear slightly jerky to some people.

Within a year, Yencharis said CD/Networker will be able to deliver 30 image files a second for very smooth animated motion.

Yencharis said Lotus has been working to incorporate animation into 1-2-3 for nearly two years. He said he has seen demonstrations of the animation feature and predicted it will be a hit with end users, especially those inhibited by computers.

"There are many end users

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Exec details firm's net-based OLTP tools

Cooperative Solutions' Dennis McEvoy says early users of Ellipse are slashing development times.

Q&A For companies looking at implementing on-line transaction processing (OLTP) systems on local-area networks, Cooperative Solutions, Inc. is one of the first firms to offer a comprehensive LAN-based development system for building client/server applications.

The system, called Ellipse, runs under OS/2 at the server, and OS/2 and Microsoft Corp. Windows at the client. It enables developers with no experience in client/server computing or transaction processing to rapidly develop and deploy LAN-based OLTP applications.

Last month, Cooperative Solutions announced a joint development agreement with Novell, Inc. to port Ellipse to Novell's NetWare. Dennis McEvoy, president and chief executive officer of Cooperative Solutions, recently spoke with *Network World* Executive Editor John Dix and West Coast Bureau Chief Timothy O'Brien about the company's products and strategy.

What feedback are you getting from customers using your product to create new OLTP applications?

Customers are implementing applications in three to eight weeks, and we now have four customers with systems in production. They are making claims that what took two months with Ellipse would have taken two 'person years' in C [language]. One customer said two COBOL programmers unfamiliar with client/server computing built an application in three weeks.

We've been able to validate our original claims that the product would enable programmers who didn't know anything about OLTP, client/server, remote procedure calls or [graphical user interfaces] to build applications utilizing these technologies.

Since we're a new company helping other companies build important business applications, one of the things that is very important for us is to establish credibility. The facts that we've attracted $29 million of venture capital and Novell has invested in the company have given us a stamp of approval that this company is doing something right. We've been able to deliver on our promises.

Our challenge now is to prove to enough early adopters that we do what we say we can do so that the bulk of the market finds it easy to buy later on. Our strategy has been to seed high-visibility accounts and make them incredibly successful and referenceable in the first six to nine months of selling the product.

"One of the things that is very important for us is to establish credibility."

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What benefits does Ellipse provide to a developer building an OLTP application that other client/server GUI development tools do not offer?

Well, there are two main areas. First, in the development environment itself, we have a multiuser system that is client/server-based with an active LAN-server repository that provides full version control and configuration management. In this way, multiple developers can build large or midsize applications in parallel, with the system automatically accommodating the various changes.

The GUI development tools such as Gupta Technologies, Inc.'s SQL Windows or Powersoft [Corp.'s] PowerBuilder are all single-user client-based products. Even though you can put these client modules on the file server, there is no active component that worries about versioning and other features. This requires a third-party product that isn't integrated to do that at the source module level.

We've provided for all that at

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MasterCard close to awarding Omni pacts

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Project Omni is intended to lower MasterCard's costs for credit card clearing and settlement, authorization and risk management ("MasterCard project aims to cut net costs," *NW*, Jan. 21, 1991). MasterCard also hopes to improve network service for member banks.

"The goal is to try to give the members as much real-time information as they can take to give them an opportunity to make a better decision about their customer's spending," Verdi said.

The Unix MIPs are expected to provide four times the throughput of the IBM processors, he said. The Series/1s process between four and six credit card transactions per second, while the minimum throughput of the new MIPs will be between 16 and 24 transactions per second, he said.

According to Verdi, MasterCard is looking to forge a "strategic partnership" with a telecommunications company for end-to-end service as well as equipment and line maintenance.

"It's better to go through one source than for MasterCard to be doing it," Verdi said. MasterCard will also be able to place its equipment at carrier points of presence around the world instead of locating it at member banks or third-party facilities, he added.

Verdi said MasterCard negotiated with AT&T, MCI Communications Corp. and British Telecommunications PLC.

Lotus features animation with release

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that won't even touch 1-2-3 without this," he said.

Initially, the animation will be used only to explain how to use 1-2-3. But Yencharis predicated that Lotus will expand the multimedia capability within a year to enable users to create animated graphics on 1-2-3.

Efficient utilization

Steve Barlowe, Lotus' multimedia product manager, predicted that most companies will find it more economical to deliver multimedia capabilities across a LAN than on a stand-alone basis. Delivering multimedia capabilities from a LAN server would enable multiple users to share CDROM resources and cut costs.

Barlowe said users running 1-2-3 under Microsoft Corp. Windows Version 3.0 or 3.1 on a stand-alone basis will be able to upgrade their software to support the Multimedia SmartHelp feature for $49. He declined to say how much the networked version of Multimedia SmartHelp for 1-2-3 will cost.

Exec details firm's net-based OLTP tools

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the individual object level, so if changes are made by one developer, another developer has the option of keeping a separate version or updating the new version.

Why is that important to OLTP? Typically, an order entry system is not built by a single developer; it's built by a team of developers — anywhere from two to 10 people. They need to cooperate to get this application done as quickly as possible.

> "What we've done with Ellipse is to eliminate the need to program in the development environment."
>
> ▲▲▲

The problem of letting developers work together has to be solved somehow, and today, it is done by pencil and paper or other manual methods. With Ellipse, not only do we handle the GUI part, we handle the the application splitting automatically between the client and server so developers don't need to worry about things like RPCs. Ellipse also provides a template-based editor for building procedures so that developers don't have to learn the SQL syntax, and we've eliminated all systems-level tasks, such as error recovery, which programmers typically have to do.

In essence, what we've done with Ellipse is to eliminate the need to program in the development environment. With the GUI front-end tools, programming is eliminated for the graphical interface and for SQL calls, but it is still required for other SQL functions.

The other area is in the system's level of reliability and management. In the production system, we automatically implement functions such as error recovery, distributed transaction management, application partitioning, security and portability without changing the program. Then, across development and production, we do the life cycle management for version control and configuration management.

These are the things an MIS person knows are necessary to control and manage an application. Typically in a mainframe environment, there is system software like CICS and a set of ancillary tools to handle version control and configuration management. With Ellipse, we provide that functionality in an integrated client/server package with graphical interfaces.

It's a comprehensive way to do transaction processing on client/server platforms — there is a development tool and production system component much like CICS on the mainframe that worries about error recovery, scalability and those types of is-

sues, and life cycle management, which is integrated with both and ties them.

What databases are currently supported through Ellipse?

We support Sybase, Inc.'s SQL Server and will soon deliver support for Oracle Corp.'s database. Those two seem to be the main databases people want for OLTP applications.

Isn't one of the major concerns about implementing OLTP applications on a LAN still the issue of reliability?

I think there is a relationship between the amount of reliability required and the amount that people are willing to pay. With a more important application or more users, there is less tolerance for failures and people will pay more.

What we've done in our software is implement it with a philosophy that says 'Anything can go wrong at any time; you always test for errors, and you stay up and running in the face of errors.' The system doesn't abort with an error or anything like that. Rather, [the procedure] is: Log the error, retry it and, if it is unsuccessful, back out of the transaction, give the user an informative message and keep going.

If you come from mainframe or fault-tolerant environments, that's a philosophy that's ingrained in your head. There has been a dichotomy between what is considered reliable in the personal computer industry and what is considered reliable to the mainframe OLTP mentality. What we've done is bring in people who understand both of those worlds, the PC environment's ease of use and the 'must stay running in the face of errors' mentality of the mainframe OLTP world.

What that means is that we have people who designed Ellipse to be extremely good at recovering from transient software failures. You can be running a transaction in our software and restart Microsoft's SQL Server on the server and everything works. You can have all kinds of errors on the LAN and everything works. You can lose connections and everything still works. That's pretty phenomenal to people because, otherwise, you've got to code that for yourself or it just won't work like that.

Where is the market for OLTP today? Are users going ahead with plans to move to the LAN?

Every large MIS organization has some initiative under way for either downsizing or client/server. Everyone recognizes that there is a set of applications that could be more cost-effectively deployed in a LAN client/server environment as opposed to a mainframe. In addition, most of those organizations now recognize that they can deliver better applications to users.

There is so much pressure to get applications developed that I think management now views this change to client/server as being inevitable for distributed applications, even if mainframes are kept for some older applications.

HP pack offers link for multiple systems

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systems and IBM MVS/TSO, VM/CMS and CICS environments.

It also supports IBM's High Level Language API to automate tasks that require a series of actions, Response Time Monitor to evaluate host responsiveness and NetView 3270 User Alerts for sending management data to IBM's NetView.

The LU 6.2 API software is called HP-UX SNAplusAPI, which also runs on HP Series 9000 Models 300, 400, 700 and 800 systems. The software allows the HP processors to emulate IBM PU 2.0 and 2.1 nodes, which are necessary for establishing the logical session between the HP system and the IBM mainframe.

The software supports multiple concurrent sessions and allows applications to communicate with one another across a network to accomplish a single task, such as querying a remote database.

The HP SNAplusLink card and software package for data link access is priced from $3,400 to $11,200. HP SNAplus 3270 is priced from $1,110 to $11,200. HP SNAplusAPI LU 6.2 software is priced from $1,500 to $14,000. All products are available now.

FTS 2000 video users need more than codec

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choices. FTS 2000 reserved service users cannot buy their own codec because, under the contract — which predates the H.261 videoconferencing standard — the codec, as well as the channel service unit and multiplexer, comes bundled with the videoconferencing service from AT&T or Sprint.

Users that employ FTS 2000 switched data services for videoconferencing, which is said to be about 50% cheaper than reserved service, can buy their own codec but will find themselves stranded from users of reserved services. Unlike the vendors' commercial videoconferencing services, FTS 2000 switched data services and reserved services are not interoperable.

Sprint declined to list charges users pay for leasing the FTS 2000 bundled equipment. However, John Earner, FTS 2000 video services product manager for AT&T, said the carrier has an $800 per month service-ready charge for access and maintenance, a $900 per month charge for the codec lease and a $110 per hour videoconferencing usage charge.

John Halsall, the GSA's administrative director in charge of the agency's 12 videoconferencing sites, said leasing provides a way to try videoconferencing without having to pay $30,000 up front for a codec.

But the EPA's Denny contendeds that users need choices. "I would like to see leased and unbundled [options] offered," he said. "I'd like to have a choice."

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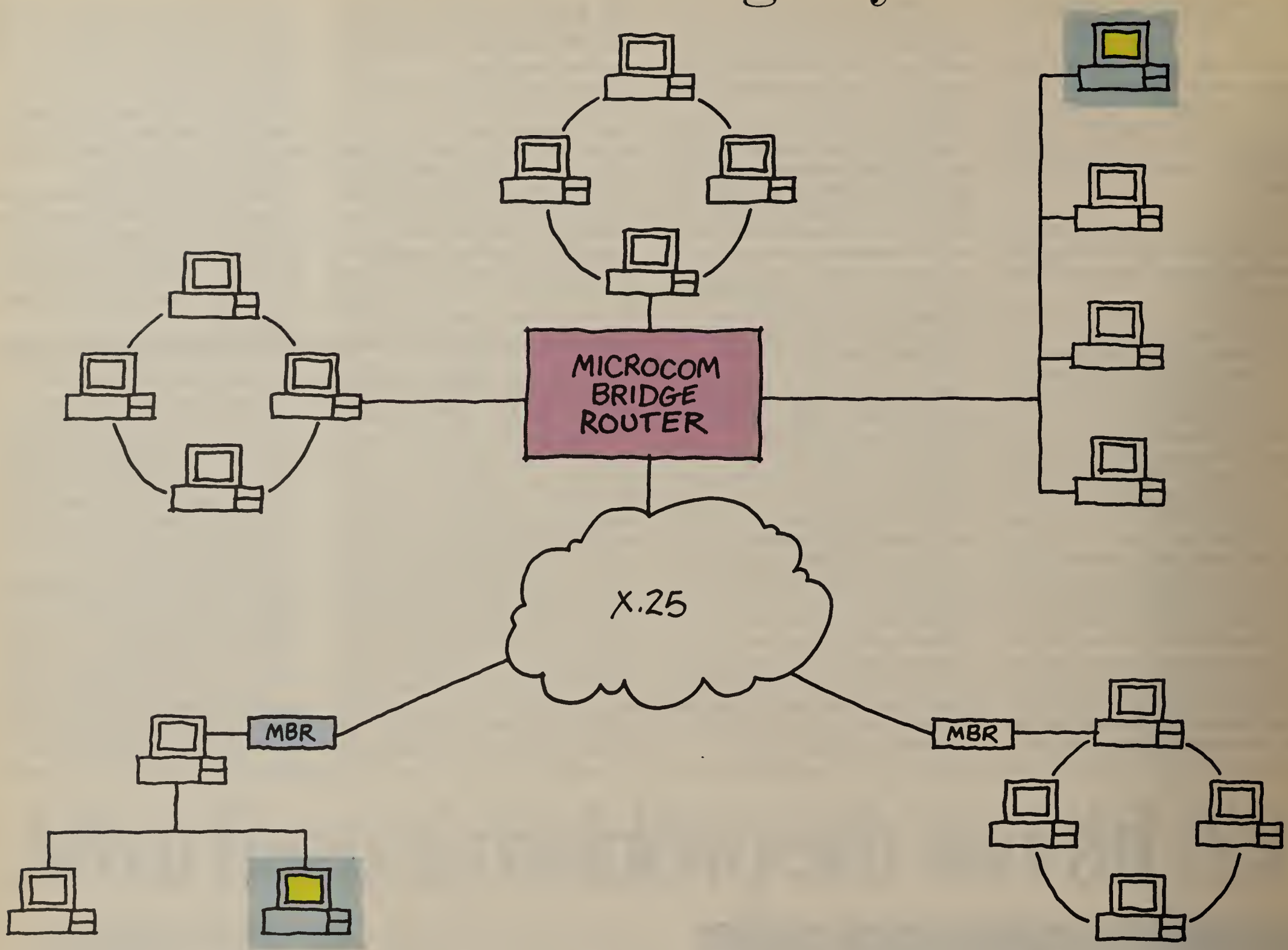

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September 10, 1991
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Worth Noting

"The [IBM] RISC/6000's mad dash to the top of the Unix application server heap means that Sun and HP are going to have an increasingly tougher time [landing] commercial accounts."

John McCarthy
Director of computing strategy research
Forrester Research, Inc.
Cambridge, Mass.

People & Positions

The Ascom Group last week named **William O'Connor** president of **Ascom Timeplex, Inc.**, the core business unit of Ascom's Enterprise Networks Division.

O'Connor succeeds Dewaine Osman, who will continue working as an advisor to the company's board of directors.

Previous to this position, O'Connor was a Scientific-Atlanta, Inc. senior vice-president and president of that company's Broadband Communications Group.

Daniel Doran, who previously served as director of sales for Lotus Development Corp.'s Notes and cc:Mail communications products, was recently appointed to the position of senior vice-president of operations at **Keyfile Corp.**, a Nashua, N.H., maker of document management software.

In his new position, Doran will be responsible for expanding Keyfile's sales program by recruiting value-added resellers.

He will work to increase membership in the company's consultant alliance program and oversee both its customer training and support programs.

Apple won't pin all of its future hopes on Taligent

Company exec pledges to keep the Mac alive.

By Margie Wylie
Senior Editor

NAPA, Calif. — When its Taligent, Inc. joint venture with IBM grew up and moved out last month, Apple Computer, Inc. seemed willing to hitch the future of its Macintosh computer to the operating system kernel that Taligent was chartered to develop.

Now, however, Apple seems to be having second thoughts about losing its cash cow. At a conference held here last week, the Cupertino, Calif.-based company edged away from its commitment to Taligent, saying it will continue to develop and sell proprietary Macintosh systems that complement the joint venture's offerings.

"The Mac is not dead," said Michael Spindler, Apple's chief operating officer. "It is our belief that Macintosh is extendable into the year 2000."

Apple drove home its point by displaying a host of new Macintosh system software features still under development ("Apple lays out net future of System 7," *NW,* March 9).

Currently, the Macintosh operating system is available only on Apple hardware. Taligent's operating system kernel, due early next year and code-named Pink, would let users run the Macintosh operating system on a range of hardware, most notably computers built with IBM's Reduced Instruction Set Computing-based PowerPC chip. The capability would let users buy hardware independent of the Macintosh operating system that Apple once touted.

The company is now laying out plans for proprietary Macintoshes that extend far into Taligent's future and claiming that Pink has always been targeted at a different class of user.

"There's a whole class of problems that can't be solved with mainstream solutions," said John Sculley, Apple's chief executive officer. When paired with PowerPC's speed, the portable kernel, object-oriented Pink environment will appeal to those corporations trying to deploy enterprisewide custom applications, he added.

Apple officials said they never

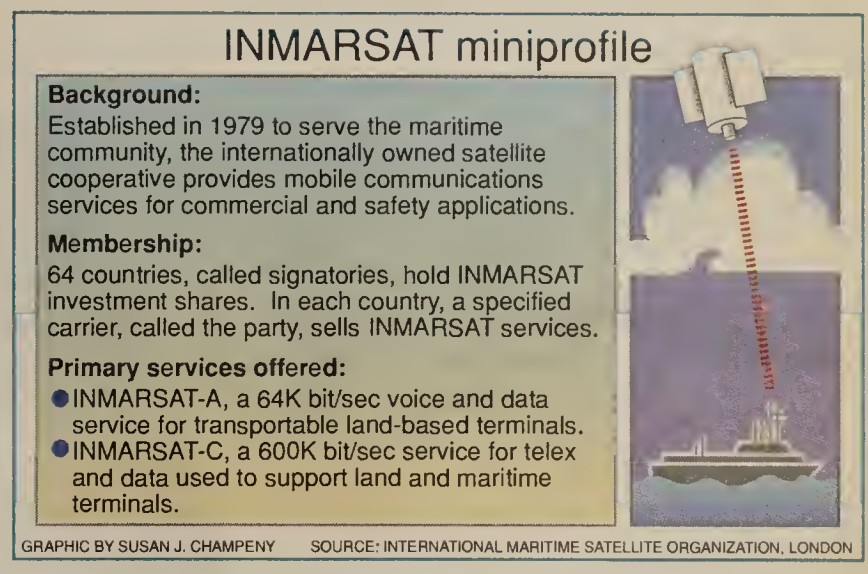
(continued on page 24)

INDUSTRY BRIEFS

IBM partners on outsourcing. IBM unit Integrated Systems Solutions Corp. and Policy Management Systems Corp. last week announced an agreement to jointly provide outsourcing services to the insurance industry. The outsourcing organizations will offer a new service, dubbed Inserv, which is designed to provide custom information services to life, health, property and casualty insurers. Inserv offerings will include network management and shared host processing.

Novell consolidates sales group. Novell, Inc. announced it will fold its worldwide sales organization into its Corporate Services Group headed by Executive Vice-President Mary Burnside. Sales responsibilities are being integrated with the Corporate Services Group's centralized manufacturing and distribution, customer education and training, and worldwide service and support segments. The sales organization is responsible for Novell product sales to distributors and OEMs worldwide.

Novell said the organizational change is also part of an expanding role for Richard Williams, executive vice-president and general manager of the company's Desktop Systems Group, formerly the Digital Research Systems Group, the developer of DR DOS. Williams will assume the additional responsibility of developing Novell's desktop product business with IBM and other major partners.



INMARSAT ready to challenge Iridium

Has filed for frequencies necessary to battle the proposed Motorola satellite-based net offering.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — International Maritime Satellite Organization (INMARSAT), the international satellite cooperative, announced at the recent Satellite XI conference here that it plans to compete head-to-head with the Iridium personal communications network that Motorola, Inc. plans to launch.

Patrick McDougal, INMARSAT's director of strategic planning, said the group will likely finalize technical plans this November for a new satellite system that will operate on the same radio frequency as Iridium, Motorola's proposed system of 77 low-earth orbit (LEO) satellites.

INMARSAT's announcement raised fears that the cooperative — financed by investments from 64 member countries — might take advantage of its international governmental ties to influence licensing decisions critical for systems of this type.

INMARSAT, originally established to provide communications to ships at sea, has strived in the past two years to expand its market to include land-based customers (see graphic, this page).

Today, with nearly 25% of its customers land-based, INMARSAT is rolling out new services for those users, such as a global paging service scheduled for late next year.

But the decision at the World Administrative Radio Conference (WARC) '92 to set aside radio frequency spectrum for mobile satellite services ("Int'l decisions reached on allocating radio spectrum," *NW,* March 9) spurred INMARSAT to jump into the ring and fight for the the newly available bands.

On the day the WARC delegates decided that the 1610-MHz to 1626.5-MHz and 2483.5-MHz to 2520-MHz ranges will be used for new mobile satellite services, INMARSAT filed a statement of intent to use the bands with the International Frequency Registration Board, McDougal said.

The new bands are widely viewed by industry as suitable for a new generation of satellites that could deliver voice and data services to hand-held telephones and laptop terminals anywhere in the world. Motorola, Loral Qualcomm Satellite Services, Inc. and Ellipsat, Inc. have each unveiled proposals to construct LEO satellites and are working to build partnerships and win investment backing.

However, it remains unclear whether the bands for LEO satellites can be shared. A WARC resolution stated that "only a very limited number of LEO systems offering worldwide coverage can coexist in any frequency band."

The WARC resolution noted that there are no standards for the coordination, sharing and operation of such systems. The WARC delegates asked the International Telecommunication Union's technical groups to undertake studies on LEO satellites.

McDougal said INMARSAT will likely unveil a technical proposal in November that consists not

(continued on page 24)

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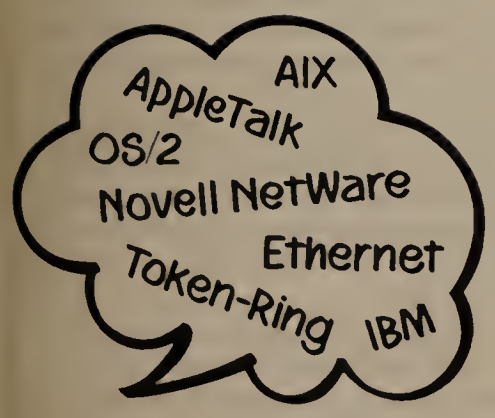

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INMARSAT ready to challenge Iridium

continued from page 21

only of LEO satellites, but a mix of LEO and geostationary satellites. "Do we consider Iridium to be a competitor? The answer is yes," McDougal said. "If Iridium is realized, they will be fighting for the same customers as we are."

McDougal labeled Loral, Motorola and TRW, Inc. "essentially equipment manufacturers that face dwindling Department of Defense budgets and want other markets." While emphasizing that INMARSAT is prepared to compete against Iridium, he held out the prospect of an industry alliance in the future.

PTT influence

Filing for radio spectrum is just the first regulatory step a new system provider must take; it must also receive a license in every country in which it wants to offer satellite service.

INMARSAT is a consortium funded by post, telegraph and telephone administrations that some fear could use its government influence to edge out private-sector competition for new spectrum licenses.

Consultant Sylvia Ospina, a Washington, D.C.-based specialist in international telecommunications space law, said INMARSAT has an advantage over its private-sector competitors.

Ospina noted that each government associated with INMARSAT receives income from their national carriers that sell INMARSAT services. That income is used to construct the satellite systems that the governments require.

"What advantage is it for them to let a foreign company come in and take over their revenues?" she asked.

Profitability question

The prospect of multiple LEO systems competing for the same customers also has the industry concerned.

At the Satellite XI conference, Karl Savatiel, director of AT&T satellite communications, said the new frequencies made available at WARC now makes possible "the potential in the next few years to provide worldwide connectivity for communications. I only have one caution: Because we deal with a sexy technology, we can easily get blinded by its capabilities and lose the fact that we have to make a profit on the business."

> "Because we deal with a sexy technology, we can easily get blinded by its capabilities and lose the fact that we have to make a profit on the business."
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Motorola declined to comment on the prospect of competing with INMARSAT. But at the conference, Robert Kinzie, chairman of Iridium, Inc., the company founded by Motorola to manage the Iridium project, said the decision at WARC "was the baptismal event for LEO" satellites in which the billions of dollars later invested in software engineering and national communications gateways will mean new jobs and services worldwide.

To date, Motorola has declined to announce its partners in Iridium, but Kinzie said the company this fall plans to unveil its teammates on the project.

Apple won't pin all hopes on Taligent

continued from page 21

claimed that Pink would supercede the Macintosh and misperceptions to that effect were due to communications failures as well as users and media jumping to conclusions.

"GM can say that they are going to build an electric car and nobody says that GM is getting out of the gas car business," said Roger Heinen, vice-president and general manager of the Macintosh Software Architecture Division.

Not everyone buys that explanation. "IBM and Apple blew it," said William Bluestein, senior analyst for Forrester Research, Inc., a Cambridge, Mass.-based research and consulting company. "They should have announced everything [about Taligent] or nothing."

There is even some internal doubt at Apple that it can reliably predict where the Macintosh will eventually fit in with Taligent's offering. "We can't say for sure how [the two] will fit together," said Charlie Oppenheimer, director of marketing for Macintosh system software.

Worth Noting

"People are what determine the success of a help desk. Technology can help, but if you have the right people, you can have a top-notch help desk using just paper and pencils."

Edward Hawthorne
Vice-president
BankAmerica Corp.
Concord, Calif.

Association Watch

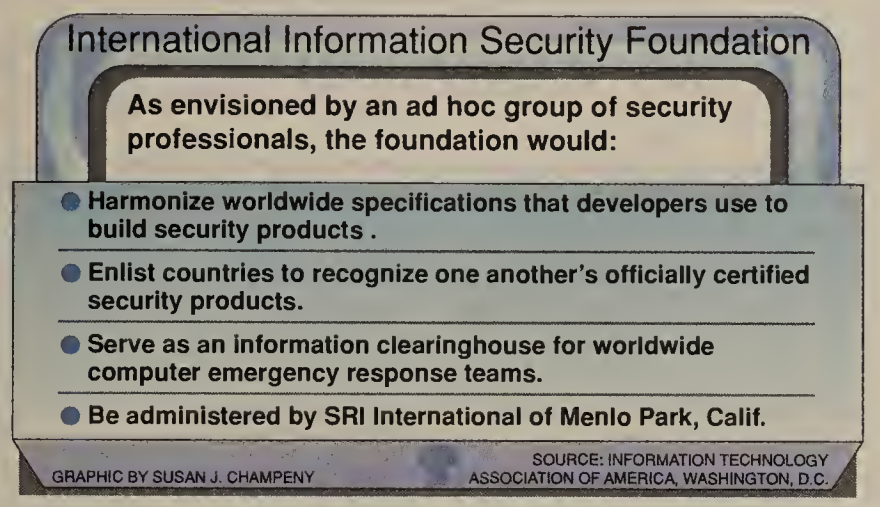
The Colorado Chapter of the **Tele-Communications Association, Inc.** will host the 7th Annual Rocky Mountain Telecommunications Exposition April 15-16 at the Sheraton Denver Tech Center in Denver.

The show will focus on voice and data communications technologies and services. The event costs $40 for members and $80 for nonmembers. For more information, call (303) 397-2555.

The U.S. Chapter of the **Digital Equipment Computer Users Society** will hold its Spring Seminars and Symposium program May 2-8 at the Georgia World Congress Center, the Atlanta Marriott Marquis and the Atlanta Hilton and Towers, all in Atlanta.

The symposium will consist of more than 1,000 hours of tutorials, clinics and workshops on a variety of topics and will feature a special session on Digital Equipment Corp.'s Alpha technology. Registration for this session costs $135 before April 8 and $185 thereafter.

Pricing for the week-long event varies according to the sessions and days attended. For more information, call (508) 841-3341.



GE unit offers outsourcing service for enterprise nets

Users can purchase part or all of six-point plan.

By Joanne Cummings
Staff Writer

ATLANTA — General Electric Co.'s GE Computer Service (GECS) division recently unveiled GE Network Resources, a package of services ranging from network design consulting to complete net outsourcing.

GE Network Resources is intended to help users build and manage enterprisewide nets, according to Patrick Horgan, GECS manager of sales and marketing.

GECS has been offering similar services on a customer-demand basis, but this is the first time it has formalized the offerings under a service package.

GE Network Resources comprises six services. The Network Design and Consulting service provides users with guidance on selecting equipment and configurations for networks ranging from peer-to-peer local-area networks with two or three nodes and a server to enterprisewide nets with several LANs and more than 100 nodes per server. The service ranges from needs analysis, design, site analysis and evaluation to project management.

Network Installation provides complete installation services for application software, cabling, hardware and network operating systems.

GECS will also provide end-user and administrator training, including on-site training.

The Critical Network Component Coverage service protects against prolonged downtime and covers products GECS deems critical to a net's operation, such as servers, gateways, bridges, routers and concentrators. It is available in three versions. The Basic plan offers replacement of a failed part. The Basic + offering provides reconfiguration of the net after the failed part has been replaced, and the Basic ++ plan offers full data restoration from storage media after a network failure.

GECS also offers Network Trouble Shooting, through which GECS will troubleshoot a customer's network over the phone and, if necessary, dispatch a technician to the site to resolve a problem.

The Predictive Network Maintenance service offers scheduled periodic maintenance checks of the customer's network in order to identify potential problems before they occur. Between maintenance calls, GECS technicians will also use on-line diagnostics to monitor the net.

Finally, GECS is offering Network Administration, a service through which it will manage changes in the network as a company grows. It includes adding workstations, replacing servers, installing software upgrades, adding new applications and linking LANs to wide-area networks.

GECS said any part of each service can be purchased separately or all the services can be purchased as a package. When purchased together, companies completely turn over the daily operation and management of their network to GECS, enabling them to concentrate on running their core business, Horgan said.

GE Network Resources is currently available. Horgan declined to provide specific pricing. He said each offering will be tailored to the customer's needs and the cost would depend on the size of the network and the range of services required.

Group calls for int'l security organization

IISF to encourage countries to endorse security certifications worldwide and share information.

By Wayne Eckerson
Senior Editor

WASHINGTON, D.C. — An ad hoc organization of security professionals last week issued a report calling for the formation of an international security group that would coordinate the development of computer and net security standards worldwide.

The new security body, dubbed the International Information Security Foundation (IISF), would encourage countries to endorse one another's certification procedures for security products.

In addition, IISF would provide up-to-date information on computer emergency response teams (CERT) throughout the world as well as other services they offer. CERTs are groups of security professionals trained to limit the impact of security breaches and help companies recover from breaks.

The ad hoc industry group, which will now disband, includes vendors, users and consultants, all representing such organizations as the ITAA, the Computer and Business Equipment Manufacturers Association and the International Systems Security Association.

The ad hoc group recommended that SRI International organize and oversee the IISF. SRI International, a nonprofit consulting and research firm in Menlo Park, Calif., has already formed a business plan for the IISF and will soon begin raising money from corporations to fund IISF activities, according to Cris Castro, director of information security programs at SRI International.

Castro added that SRI International frequently spearheads the formation and management of nonprofit industry groups. About 140 of SRI International's 2,500 scientists and consultants work on security issues.

The ad hoc group, comprising 30 to 40 security experts, began meeting last August to discuss recommendations made in the "Computers at Risk" report issued in December 1990 by the federal government, according to Mike DeFazio, chairman of the security committee for the Information Technology Association of America (ITAA), an organization of 700 U.S.-based software development and service firms.

The group agreed with the recommendations in the "Computers at Risk" report but with some modifications. Most notably, the group espoused a much narrower role for the IISF than what was recommended by the federal government.

It also emphasized that the IISF should have an international focus and not duplicate the work of existing security groups, but rather harmonize their efforts.

Major mission

The major mission of the IISF would be to help countries establish a single set of security requirements, or General Systems Security Principles (GSSP), that vendors would adhere to when building information systems security products.

That would obviate the need for vendors to modify security products to meet each country's unique specifications.

The second major mission for the IISF, as envisioned by the industry group, would be to encourage countries to officially recognize one another's certification of security products. This would free vendors from submitting products to multiple conformance testing labs for certification.

The National Institute for Standards and Technology is already working with the European Community to standardize the certification of security products. The IISF would support these talks and foster similar discussions among other countries, DeFazio said.

Finally, the ad hoc group recommended that the IISF serve as an umbrella group to the multiplicity of CERTs already formed rather than provide CERT functions itself. The IISF would keep an up-to-date list of all CERTs as well as their services, enabling the foundation to steer callers to the team best equipped to answer their questions or solve their problems.

OPINIONS

INTERACTIVE VOICE RESPONSE

BY LES VEAL

A good IVR script keeps callers on the line

Interactive voice response (IVR) systems are now used across industries. They hand over control of the call to customers, allowing them to react to messages repeating, escaping, starting over, reviewing, modifying and transferring to an operator as needed. But for the user to successfully navigate through these options, the IVR application must communicate through clear, concise, user-friendly scripts. Most IVR experts readily admit that a poorly written, confusing or long-winded IVR menu is most often the reason callers choose to escape or simply hang up.

Effective scripting becomes especially important in light of multilingual customer audiences, where not only does the language present a challenge, but the regional and local dialects as well as cultural mores heavily influence customer attitudes and preferences. Considering that more than one-third of the growth in the U.S. during the past decade has come from immigration, especially in the Asian and Hispanic sectors, the need for cultural and linguistic sensitivity is greater than ever. Many researchers are, in fact, predicting that immigration will account for the bulk of all the country's population growth by the next century.

The lesson is a simple one. An IVR application is only as good as its script.

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The lesson to be learned is a simple one. An IVR system is only as good as its script. If callers can't figure out how to navigate through the maze of instructions or if they believe that unnecessary verbiage is eating up their time, they won't use the IVR system. Likewise, if a voice proves difficult for callers to understand or seems unfriendly, you've lost the callers again.

How can businesses develop IVR scripts that are accurate, to the point and meet the needs of their audience? To start, determine precisely who the customers are, what they are really looking for and their overall language level — that is the key to developing an effective script.

But how do businesses collect that information? By asking the customers. Research indicates that businesses have earned a reputation for assuming what's right for the customer. The fact is, people like to be asked what they think. Their responses could save considerable time and money as well as prevent many customer service headaches.

In the past, convenience has served as a catalyst for customer acceptance of IVR applications. However, IVR is quickly assuming a more complex and sophisticated role within the customer service realm. Like the technology, customers are also changing with their own needs and priorities. An effective script becomes essential to bridging the gap between customers and the information they seek.

With technology swiftly changing the way we conduct business, it's often hard for companies to keep up with the times, much less stay ahead of them. By getting to know your customers and what they're thinking by staying in constant contact with them, you can provide the level of service they expect.

Veal is director of marketing with InterVoice, Inc., an interactive voice response system vendor in Dallas.

EDITORIAL

User apathy, not lack of products, may kill OSI

This week's Enterprise Networking Event (ENE) '92 in Washington, D.C. is shaping up as the single greatest indictment yet of user and vendor apathy toward the Open Systems Interconnection movement.

Major OSI equipment vendors, many of whom rallied around OSI at ENE '88 in Baltimore, downright snubbed invites to this year's extravaganza, which will highlight how open systems — particularly those based on OSI — are being applied across industries.

The Society of Manufacturing Engineers, which organized ENE '92, said only a handful of small OSI equipment and software suppliers have agreed to exhibit at the show. At ENE '88, however, giants such as IBM, Digital Equipment Corp. and Hewlett-Packard Co. demonstrated the then-nascent Manufacturing Automation Protocol 3.0 specification and pledged broad support for OSI.

Arguably, vendors could point to the weak economy and the proliferation of industry trade shows as one reason they're skipping ENE '92, but they are not. Instead, they cite user demand for the Transmission Control Protocol/Internet Protocol as the main reason the show is getting the cold shoulder.

The issue, vendors contend, is that only a handful of users support OSI. But, in reality, it is a catch-22 situation because many users argue OSI is being derailed by a lack of products.

One disturbing fact about ENE '92 is that fewer than 100 users preregistered for the show. By contrast, more than 2,100 open systems advocates flocked to ENE '88.

While there's more competition in the TCP/IP market and developers' TCP/IP skills are more mature than OSI's, users should adopt a longer view and not ignore OSI. Sure, TCP/IP is well accepted in the U.S., but OSI has garnered considerable support abroad, particularly in Europe.

For this reason, any company that calls itself a global supplier ought to mandate vendors to support OSI. Only then, with a plentiful supply of competitive products, will OSI become an attractive network option.

REGULATORY ISSUES

BY MARK LANGNER

AT&T deregulation may stifle long-distance competition

The recent pressure on the Federal Communications Commission to relax regulation of AT&T concerning individual contract-based pricing on services is shortsighted and runs the risk of ruining the competitive U.S. long-distance telecommunications services market — as limited as it is today.

If AT&T is not properly regulated now, users will never see true competition in certain segments of the market.

Unfortunately, the FCC seems to be listening to AT&T and is essentially allowing the carrier to deregulate itself. Through agreements such as contract carriage and continued lobbying of the FCC by users in support of Tariff 12, AT&T has drastically reduced the amount of oversight the FCC gives its actions while holding on to more than 60% of the business services market.

With billions of dollars more than MCI Communications Corp. or Sprint Corp. to spend on net development, AT&T can offer services that the other two carriers cannot. If allowed to bundle that purchasing and development power with individual contract pricing, only AT&T will be able to provide the services that the largest business users require.

Without business from larger customers, MCI, Sprint and others will fall even further behind AT&T, which will regain whatever small amount of market share it has lost since divestiture.

AT&T has been able to easily outpace MCI and Sprint in the number of foreign carrier connections made. It has done this by using its name and economic power.

AT&T is first in the door compared to other carriers vying for business, and with extra personnel dedicated to international connections, it can tie up resources at foreign carriers, thus preventing them from dealing with MCI or Sprint until they first deal with AT&T.

A consistent rallying cry for the proponents of AT&T deregulation is that higher AT&T prices under current regulations are hurting customer business on the bottom line. However, AT&T has raised its prices for regular tariffed Software-Defined Network customers — the service most Tariff 12 customers would use if Tariff 12 were not available — by 3% during last year's tough economic times. It's difficult to believe that the end user's pocketbook is AT&T's ultimate concern.

> It's difficult to believe that the end user's pocketbook is AT&T's ultimate concern.
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Unfortunately, short-term gains are often more important to a company than long-term growth and stability. It is no different in the telecommunications industry, where users are pushing for the deregulation of AT&T so they can receive lower rates today, without concern about losing competing telecommunications carriers in the future.

The fact is that even if all carriers offered equivalent services, MCI and Sprint would still have to charge less than AT&T in order to survive.

AT&T, with its huge advertising and marketing resources, has an advantage in the marketplace: People perceive AT&T to be better or, at least, no worse than other carriers, regardless of whether they are or not.

This perception, coupled with AT&T's physical advantages — such as more advanced network, 800 and private-line capabilities than MCI or Sprint — as well as the fact that those two carriers are not making much headway on these areas and are losing ground internationally, means the gap between AT&T and its competitors is likely to widen. It's difficult to understand how the best interests of users can be served by deregulating AT&T.

If AT&T is deregulated, customers must be prepared for a future with higher costs for services. AT&T has consistently raised prices on services before either MCI or Sprint, which both follow suit primarily because they need the increased revenues.

The FCC should stop allowing AT&T and its customers to intimidate the agency and begin regulating in the best long-term interests of the telecommunications industry. AT&T still has far too much control over the market to be allowed to set prices on an individual basis without oversight by the FCC.

Even if AT&T didn't engage in predatory pricing, it will be able to dominate the highest level of the marketplace, on which it already has a strong grip, and stunt the future growth of competitive carriers such as MCI and Sprint. This will essentially doom future competition in the high-end business marketplace.

Langner is an associate with TeleChoice, Inc., a Montclair, N.J., consultancy specializing in strategic planning and analysis of intelligent networks, services and applications. He can be reached at (201) 746-0200.

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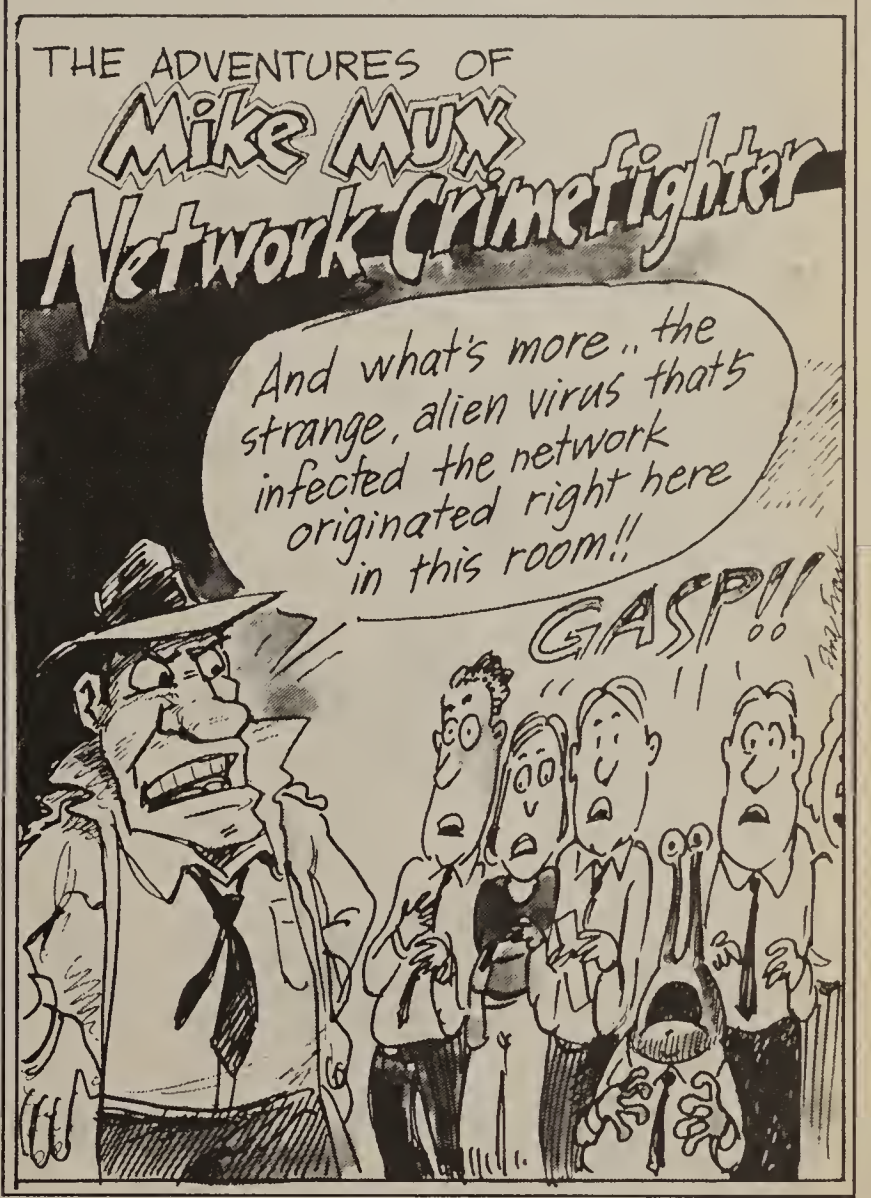

LETTERS

Not so fast on PBX

I enjoyed your recent article on inverse multiplexers ("Inverse multiplexer maker ready to add BRI support," *NW,* March 2).

In my opinion, inverse muxes epitomize the creative use of technology and reflect how quickly this industry can sometimes move.

But what inverse muxes (and other bandwidth-on-demand managers) really get me thinking about is the possibility that the inverse mux industry stands to close the videoconferencing window of opportunity that so many confer on the private branch exchange industry.

The communications industry tends to christen the PBX as the natural platform for desktop and stand-alone videoconferencing. Because of its switching capabilities, the PBX stands as the next best thing for desktop videoconferencing.

But if users implement videoconferencing slowly rather than all at once, then the inverse mux vendors stand a good chance of nailing down some of the business, particularly if Nx64K bit/sec or Integrated Services Digital Network Basic Rate Interface becomes available. Some inverse mux vendors also support BRI on the station side, which essentially substitutes for PBX switching.

I think PBX vendors could end up with a smaller window of opportunity than generally believed. They have the installed base and deep pockets, but examples abound where large companies got caught with their eye off the ball.

Bryan Van Dussen
Research analyst, telecommunications
The Yankee Group
Boston

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Letters may be edited for space and clarity.

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Source *User Ratings of T-1 Multiplexers*, January 1992 Datapro Information Services

Enterprise Networking: **ascom Timeplex** *thinks ahead*

Emerging net technologies force users to recast CIM strategies

CONTINUED FROM PAGE 1

flexible network infrastructure that is capable of supporting a wide array of communications, not only on the factory floor, but also to other areas of the organization.

Traditionally, manufacturers have established loosely coupled links between various parts of their organizations. Factory floor systems, for example, can upload batch production reports to the corporate mainframe, and order-entry records from marketing and sales systems can be forwarded to shop floor scheduling systems. These network links, however, do not allow users throughout the enterprise to access critical information on a timely basis.

There has been a steady migration on the factory floor away from mainframe-based IBM 3270 terminals to more intelligent workstations, such as personal computers interconnected via LANs.

This shift has been driven by the decision to rely on local computing power to perform many of the operations usually reserved for a mainframe. The lower cost of PC computing vs. mainframe-based processing was certainly one driving factor, but users also wanted to take advantage of the short application development cycles on PCs.

This would allow manufacturers to respond faster to changing market conditions and retool their factory applications on the fly.

As a result of this mass migration to intelligent nodes on the factory floor, users are beginning to build client/server-based applications that make use of distributed net technology rather than relying on a single host.

CIM planners realize importance of laying a flexible net foundation to support new client/server applications.

These new environments depend heavily on the network server and its network operating system to perform many functions that previously occurred on the mainframe. Even factory floors populated with distributed mid-range Digital Equipment Corp. VAXes, IBM Application System/400s or Hewlett-Packard Co. HP3000 minicomputers are moving away from dumb terminals to PCs in order to provide access to a broader range of applications.

Mainframes and minicomputers, however, still have a place in manufacturing environments.

The mainframe and minicomputer are now seen as a consolidation point, or repository, for information and not as the sole

(continued on page 30)

Chartoff is a senior manager and DeNardis is a senior consultant with Ernst & Young in Vienna, Va.

data processor.

Now, instead of having a limited number of dumb terminals hooked up to a single mainframe, users rely on distributed PCs that can gain access to any mainframe or minicomputer on the premises as well as other sites on the enterprise network.

Generally speaking, most factory networks based on mainframes or minicomputers rely on a hodgepodge of proprietary technologies. One aluminum manufacturer, for instance, uses Ethernet in a fiber-optic star configuration with couplers and data link layer bridges in several of its plants. The nets support DEC's DECnet and Local Area Transport (LAT) protocols to interconnect multiple VAXes.

A pipe manufacturer in the Southeast uses token rings to connect PCs to an AS/400 and twisted-pair wiring with twinaxial baluns to interconnect IBM 5250 terminals to the same minicomputer.

Although both users' networks are customized to the specific platforms and applications currently in use, those nets could not support a migration to other technology platforms such as Unix or high-speed imaging applications.

Net infrastructure is a critical element during the initial planning stages of a CIM implementation. But because manufacturing environments vary considerably, such as single vs. multiple plants, no one standard architecture for factory networking is the clear choice for every CIM configuration. However, net managers can rely on a common methodology to narrow the choices.

> No architecture for factory networking is the clear choice for every CIM configuration.
>
> ▲▲▲

The methodology is to separate issues into two camps — interconnectivity and interoperability — and break them down piece by piece. Interconnectivity covers connections between compatible devices, so if you have two VAXes, they can talk DECnet to DECnet but not to a Transmission Control Protocol/Internet Protocol device. Interoperability enables you to communicate between incompatible devices.

The point is to deal with a net infrastructure while applications are being developed. Many applications are developed with the connectivity as an afterthought. Yet, that thinking was often acceptable because the terminal-to-host connection was a given.

But now, LAN-based imaging and computer-aided design and manufacturing applications, for instance, require more bandwidth than other applications and the access requirement to store data is often more complicated. Now you have bursty traffic and must take into account that it often plays in a multiprotocol environment, meaning the net requirements are more complicated.

From the ground up

With any manufacturing company's network architecture, interconnectivity applies to both the wide-area links among plants, headquarters, distribution centers and research and development laboratories and the local-area links within the typically large factory campuses.

In the manufacturing industry, wide-area connectivity is typically achieved through fairly traditional solutions such as point-to-point high-speed links, T-1 backbones and X.25 packet-switched networks.

Frame relay technology is emerging as a possible choice for wide-area connectivity because of the growing amount of LAN-to-LAN traffic brought about by the proliferation of multiple subnetworks in both campus and factory floor network environments.

> The point is to deal with a network infrastructure when applications are developed.
>
> ▲▲▲

At the premises level, factory nets consist of multiple Ethernet and token-ring networks clustered together in a campus environment. These nets tend to support VAXes, AS/400s and PC LANs.

Due to the long transmission distances on factory floors and increasing traffic requirements in such an environment, a high-bandwidth backbone is typically used to extend and connect these subnets.

Many factory backbone networks, for example, interconnect users who are several thousand feet from systems such as order processing, scheduling, inventory, materials management and shipping that generate hundreds of transactions per minute.

In the past, users have deployed broadband network technology as the basis for a factory backbone. This technology, which is based on mature cable television products, was relatively low cost and allowed large amounts of bandwidth to be divided into multiple channels to

(continued on page 37)

A simple model for planning CIM nets

By Julie Fraser
Special to Network World

Computer-integrated manufacturing (CIM) historically has been viewed as a multitiered architecture that supports manufacturing applications, but network managers can look at it from a much simpler viewpoint.

Currently, network managers charged with supporting a CIM environment need to understand that a companywide CIM implementation will require them to support three applications: planning, execution of plant-level applications such as scheduling and quality control, and control of actual production processes.

In the past, those applications were often supported on three different networks that seldom, if ever, shared data.

Today, however, it is more probable that those applications share a common backbone network that extends across departments such as sales, marketing, finance, research and development, engineering, distribution and manufacturing.

Fraser is a senior industry analyst with Advanced Manufacturing Research, which provides research services on the use of information technology in the manufacturing industry.

However, production control systems generally are sold with their own proprietary network that links to the backbone network.

Advanced Manufacturing Research (AMR) has devised a business model for production planning known as customer-oriented manufacturing management systems (COMMS).

COMMS is a way of managing a business or manufacturing operation. It favors a distributed, instead of a hierarchical, approach to organizing and locating information across a company.

COMMS espouses linking various manufacturing and other departments by a common network and allows users to exchange common data as needed. By using such technologies as client/server computing, relational database management systems and graphical user interfaces, users can better support the COMMS model of distributing data throughout a company (see graphic, this page).

COMMS enables users to build CIM networks that provide access to data on the fly. This is an advantage over traditional planning models that employ Manufacturing Resource Planning (MRP) II software, which is typically designed to support hierarchical organizations.

Unfortunately, traditional MRP II software has drawbacks that no amount of tweaking will correct. It is often viewed as an accounting watchdog that serves finance, but not production, well.

Additonally, MRP II uses batch-oriented data that can't be used in real-time plant floor networks. Its hierarchical nature forces transactions through an inefficient processing chain.

MRP II vendors provide shop floor control modules to create so-called closed-loop systems to feed actual production data back to a planning system so new plans can use that information. However, most MRP II products still lack support for a customer-oriented, just-in-time approach.

COMMS advocates use of a Manufacturing Execution System (MES) to act as an interface between MRP II software running at the corporate level and plant floor applications running in the factory. An MES is an application for tracking work in process, order documentation and product development, for example.

Second, the COMMS model supports change by advocating a distributed network. Traditional mainframe-based MRP II systems lock users into an inflexible application with a handful of software modules.

If users find a better way to do their accounting, for example, they would have to disrupt their entire system because MRP II modules are linked together. A production network based on the COMMS model will enable companies to swap in new software modules as needed.

Network managers must keep in mind, however, that as products supporting the COMMS model become available, users will be required to provide links between existing systems and those new products. Because new applications will be based on a client/server architecture and run on workstations or mid-range systems, network managers will see a definite shift in network traffic patterns.

Leading manufacturers in every industry now realize they must overcome the lack of cooperation among MIS, engineering and operations departments that has created separate visions of CIM. These firms are moving to a business-driven, customer-oriented functional view of manufacturing planning such as the COMMS model.

Technologies that drive COMMS

To achieve these objectives...	...implement this technology
Data and application portability and price/performance	Client/server architecture
Flexible data access	Distributed SQL relational DBMS
Universal data access	Enterprisewide relational DBMS standards or relevant relational DBMS gateways
Application configurability	Graphical fourth-generation language computer-aided software engineering
User friendliness	Graphical user interface
Open systems portability	Standards-based application program interfaces
Business and project effectiveness	Inter- and intradepartmental integration strategy and data model

Customer-oriented manufacturing management systems is a business model for production planning that advocates distributed data. It suggests use of key technologies to attain strategic business objectives.

SOURCE: ADVANCED MANUFACTURING RESEARCH, CAMBRIDGE, MASS
GRAPHIC BY ALISON CONLIFFE

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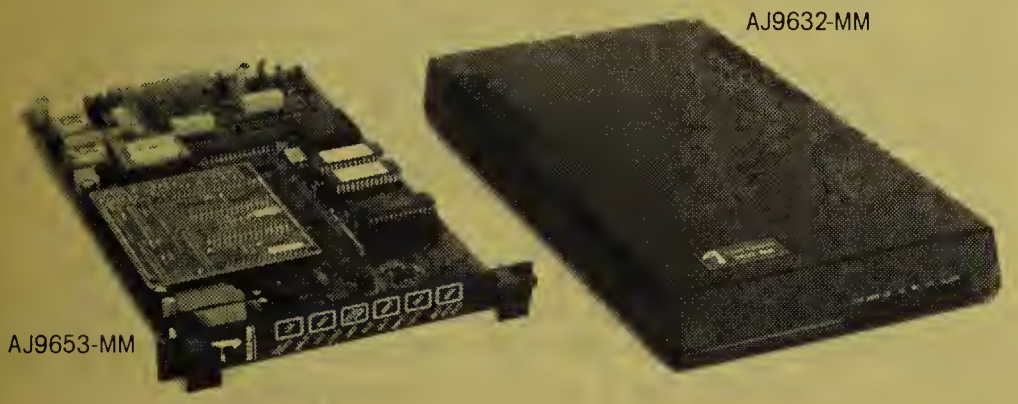

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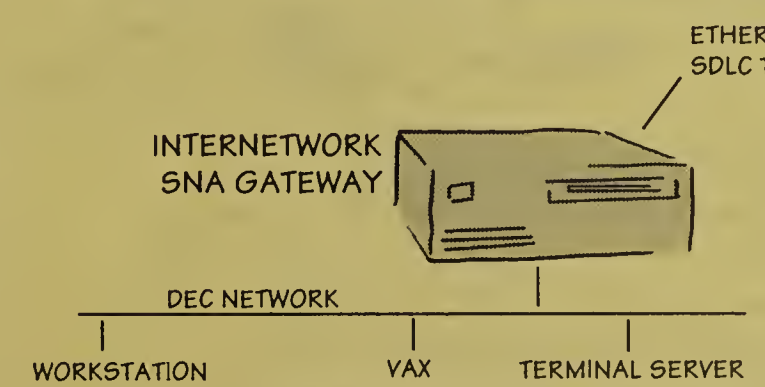

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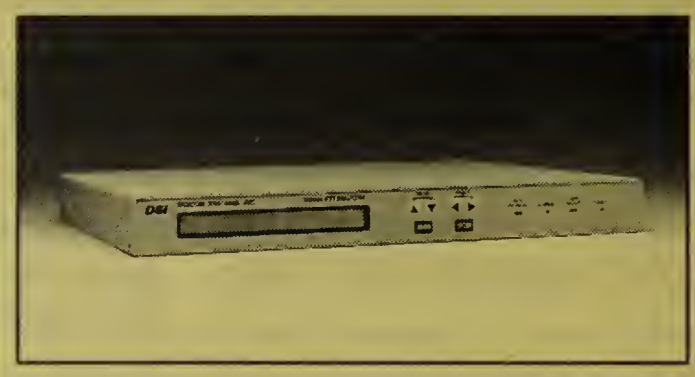

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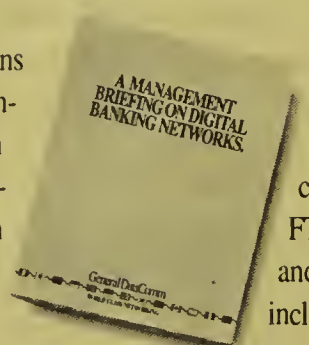

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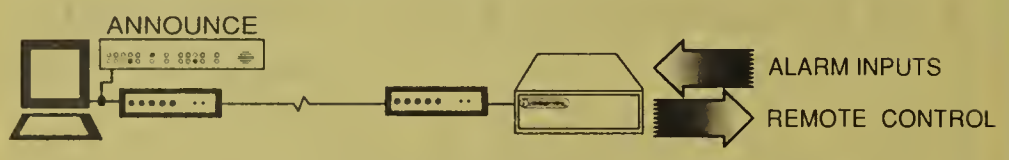

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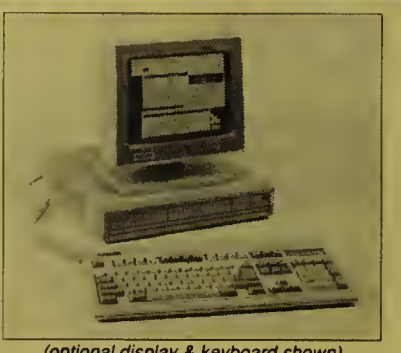

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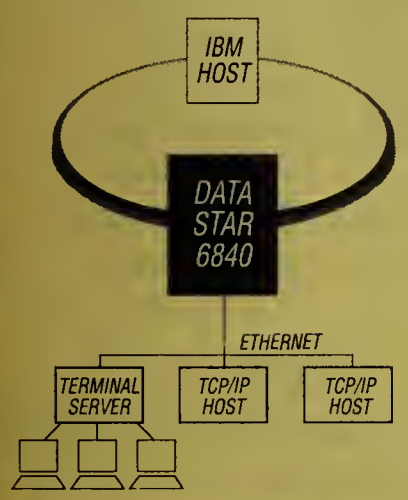

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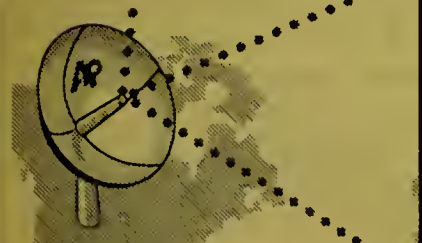

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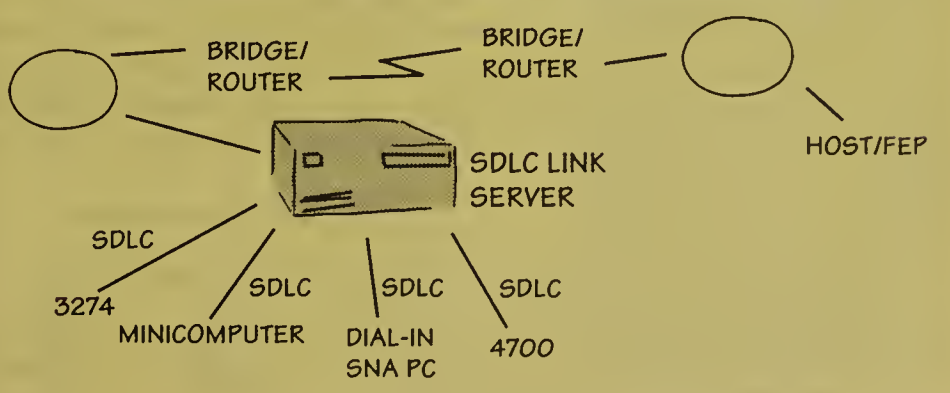

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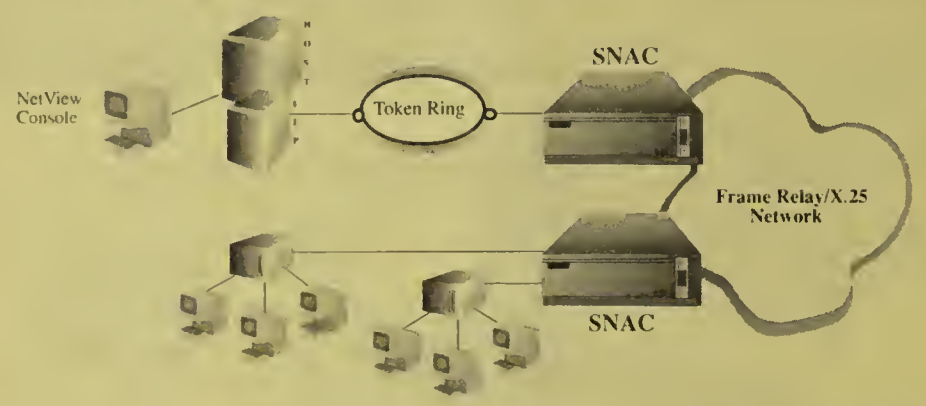

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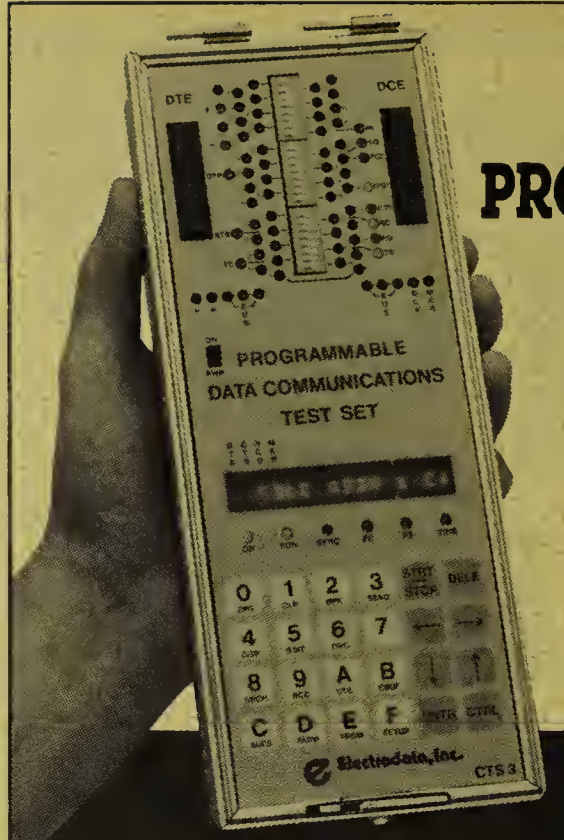

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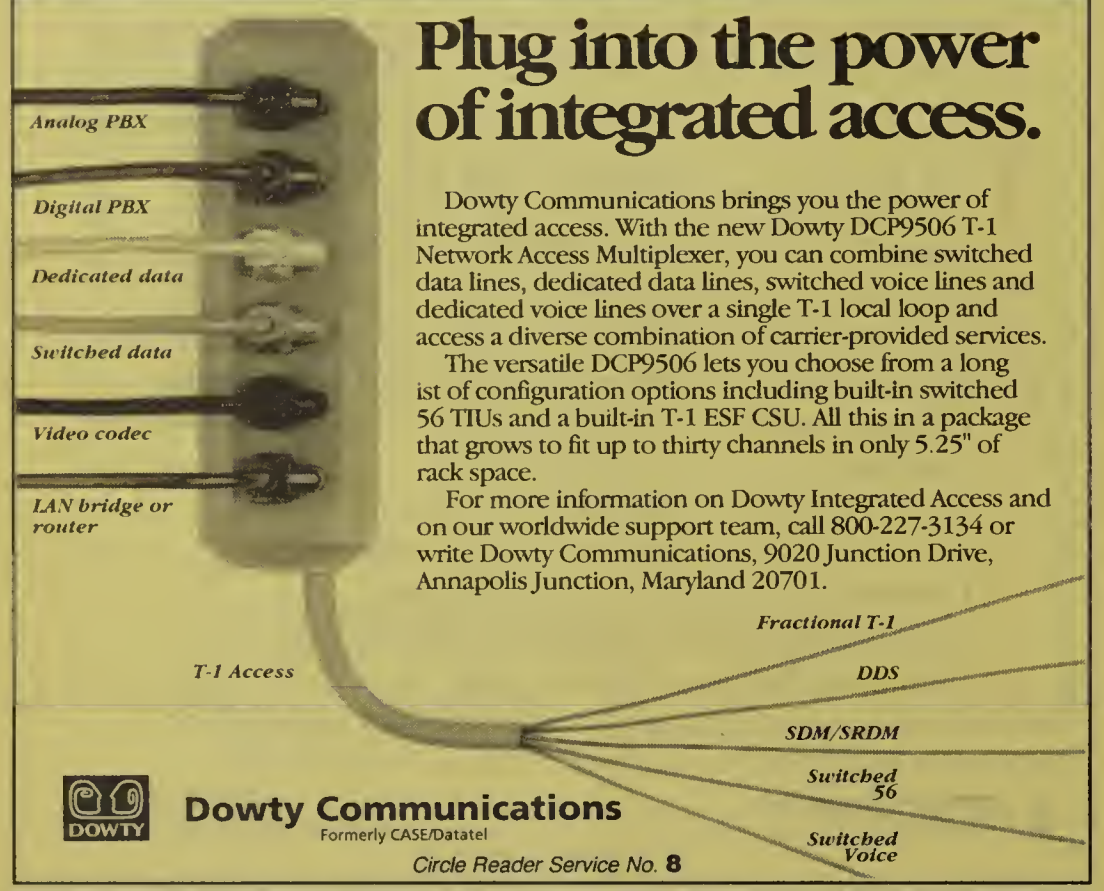

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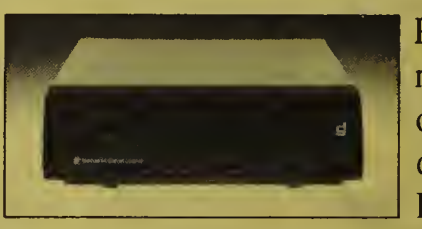

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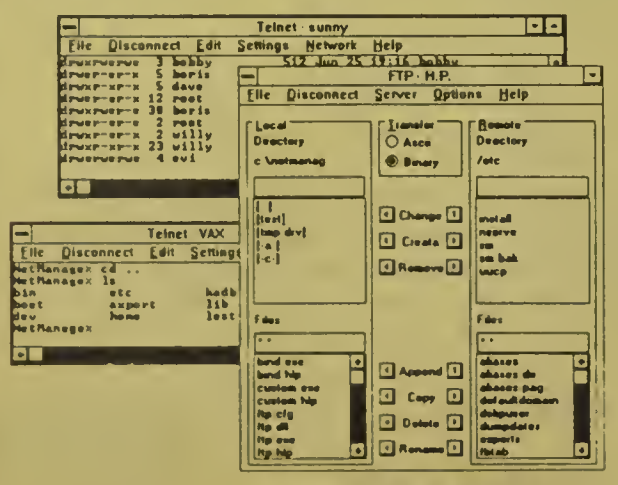

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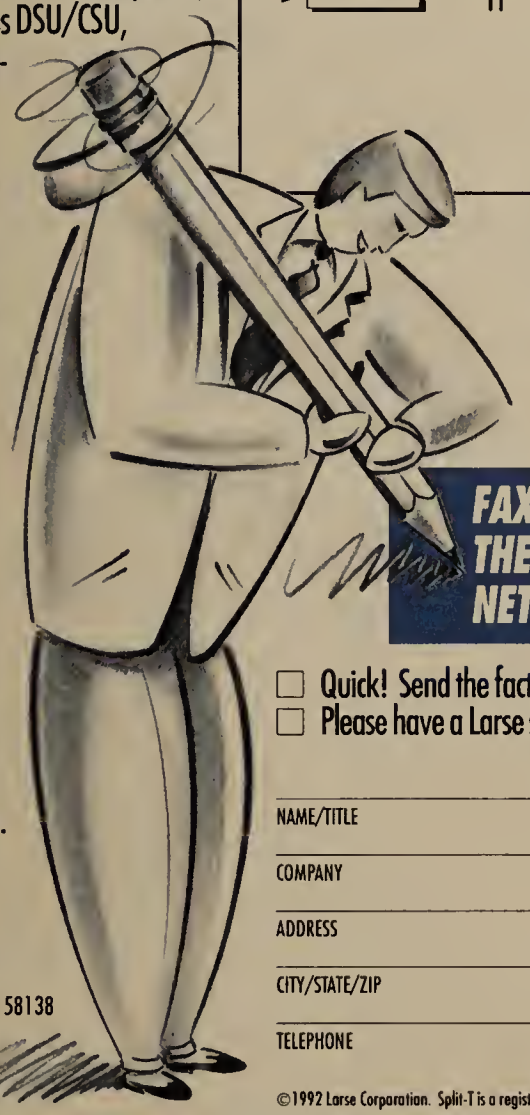

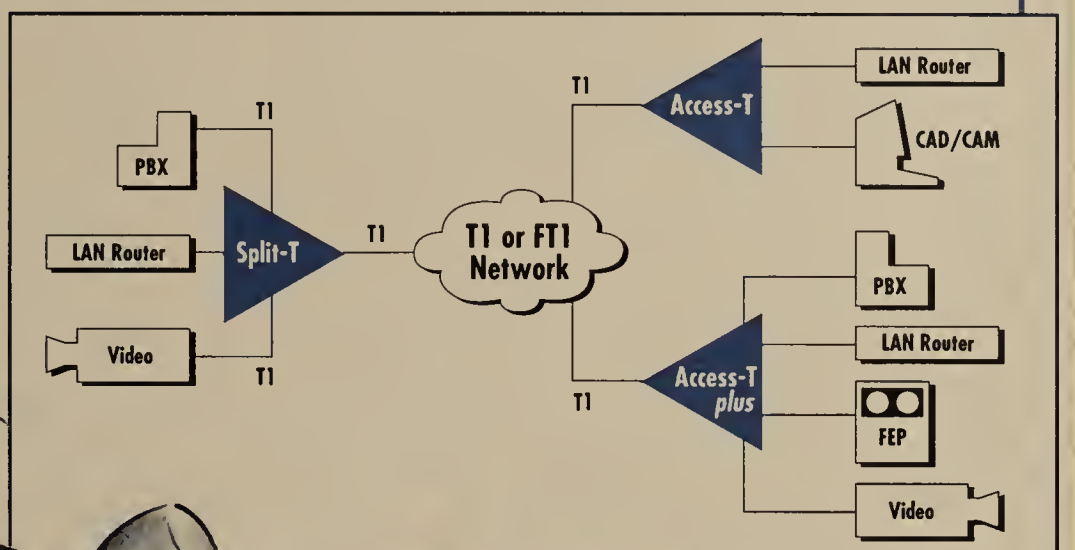

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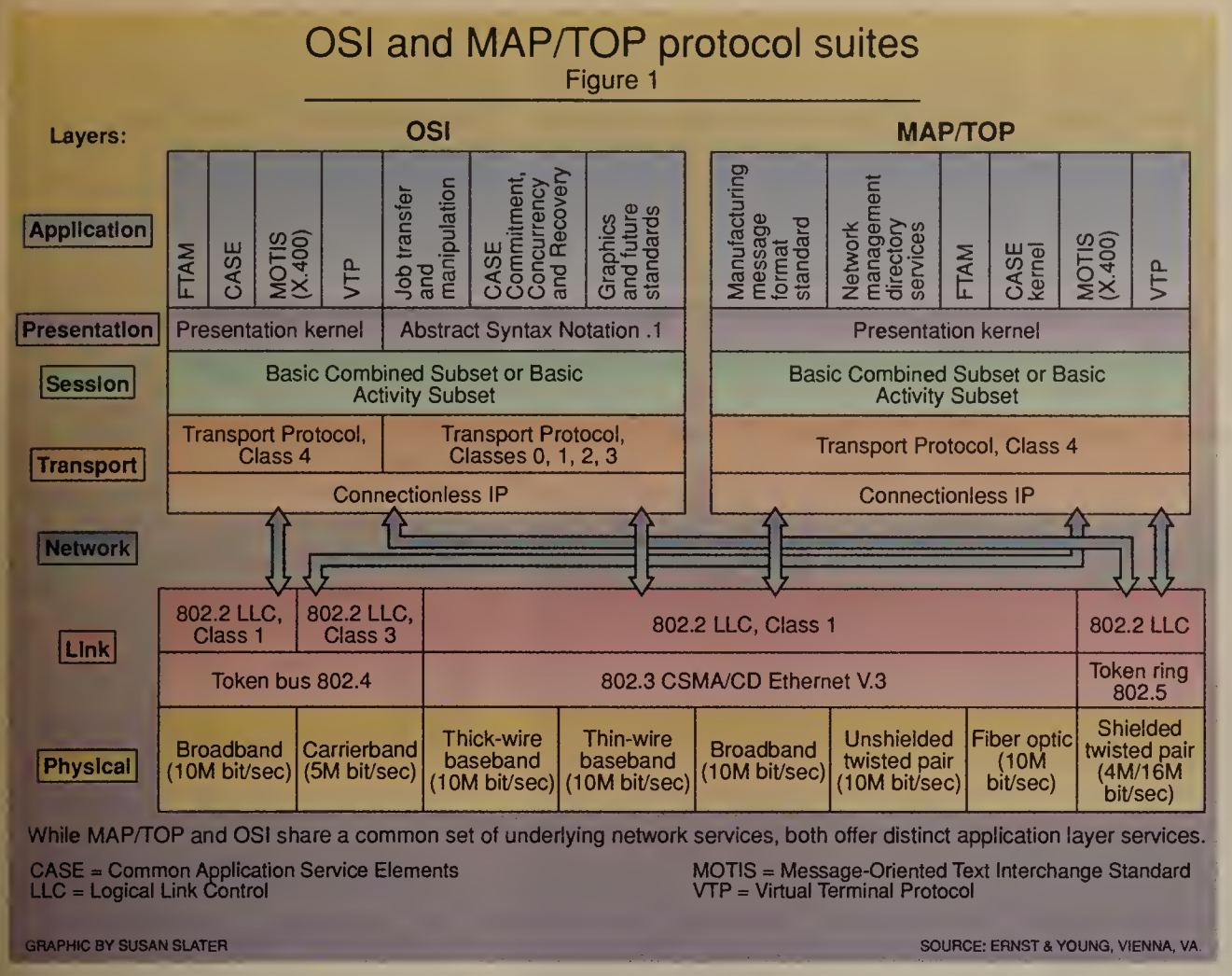

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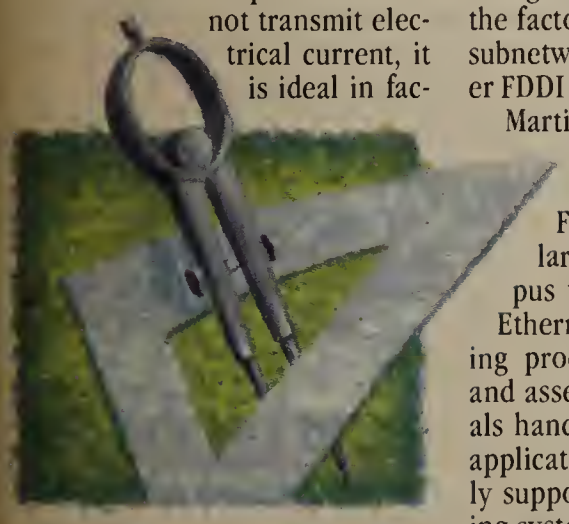
support voice, video and multiple data networks.

Today, however, the reduced cost of optical fiber and the inherent advantages of using fiber in a harsh factory environment have contributed to a large migration from broadband to fiber-based backbones.

Because fiber-optic cable does not transmit electrical current, it is ideal in fac-



tories where sparks pose a potential fire hazard. Another benefit of fiber over copper wire is that it is not susceptible to electromagnetic or radio interference emitted by certain types of equipment on the factory floor. Fiber also supports greater network distance requirements than other media.

Installation of fiber paves the way for users to implement Fiber Distributed Data Interface, which takes advantage of the low error rate and high bandwidth of fiber-optic cable. FDDI supports data transmission at rates up to 100M bit/sec, making it capable of supporting the high-bandwidth requirements of some applications.

FDDI's dual-ring configuration also provides users with a level of fault tolerance in the event one of the rings fails. As traffic grows on the factory floor as a result of an increasing number of applications, FDDI nets can be used as a backbone to link multiple subnetworks devoted to applications for data collection, materials handling, inventory control and process monitoring.

Ethernet and token-ring technologies still have their place in the factory but should be used in subnetworks that feed into a larger FDDI backbone.

Martin Marietta Energy Systems, Inc., for instance, has developed an FDDI backbone across its large manufacturing campus to interconnect multiple Ethernet subnetworks supporting product design, fabrication and assembly, as well as materials handling and quality control applications. The subnets typically support such network operating systems as Novell, Inc.'s NetWare and DEC's Pathworks.

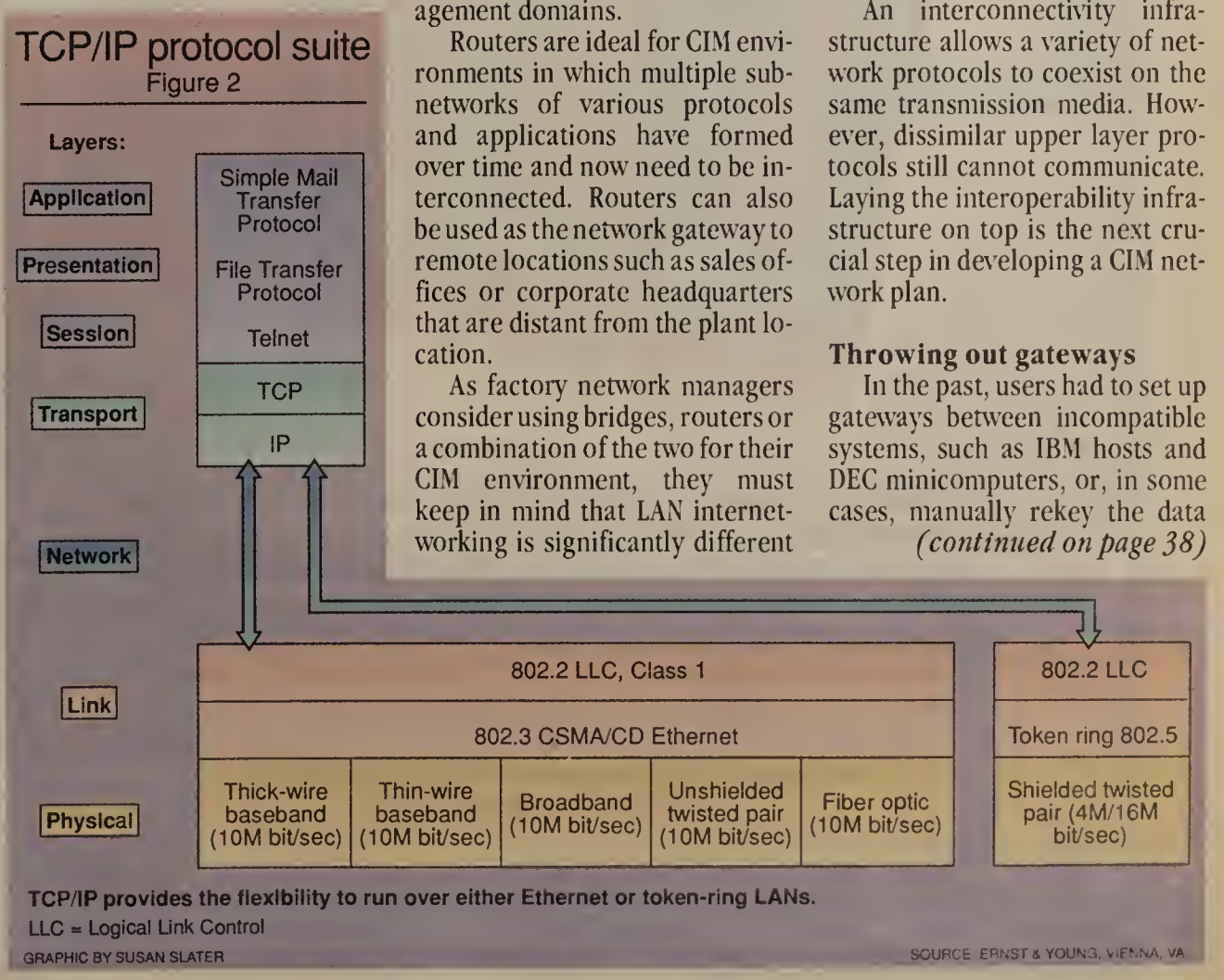
LAN internetwork options

Another factor in mapping out a network architecture for a CIM environment is the internetworking device used to link factory subnets to a campus or wide-area backbone.

The decision to opt for a LAN bridge or router is predicated on a number of issues. Although most users' goal is to eventually migrate to an open systems-based network that employs a common network protocol, the reality is most users must support multiple protocols across different factory networks.

Bridges play an important role in multiprotocol network environments because they are protocol-independent and can enable different upper layer protocols to coexist on the same LAN over a common data link layer. A DECnet environment supporting a process control application, for instance, could coexist with NetWare subnetworks running Novell's Internetwork Packet Exchange (IPX) protocols and support applications such as inventory control and shipping.

Multiprotocol routers, on the other hand, process network-layer addresses sent from originating stations and other routers and determine the most efficient path to route data through multiple segments of the network.



The router has to look at the data packet or frame and interpret what protocol it is. It can compare that data against internal routing tables to determine if a certain type of traffic can be sent to a specific address. This gives users greater control by allowing them to filter traffic on a protocol or address basis.

However, one traditional disadvantage of routers is that they tend to exhibit slower performance than bridges due to the additional processing of higher level protocols. Newer routers based on Reduced Instruction Set Computing technology are overcoming this performance issue.

Bridges are typically used for communications between small numbers of LANs for protocols that cannot be routed, such as LAT, or when security is not a major concern. Because they can filter and restrict traffic based on a variety of criteria, such as network addresses, protocols and time of day, routers are preferred in environments where security control between various segments of the network is important.

Net managers may choose to separate user groups into distinct communities of interest. For example, only financial and human resources personnel would have access to salary information on a subnetwork running a payroll application.

Routers are also well suited for interconnection of complex internetworks supporting large numbers of devices, internetworking between dissimilar media access control-layer LANs, such as Ethernet and token ring, and networks with multiple management domains.

Routers are ideal for CIM environments in which multiple subnetworks of various protocols and applications have formed over time and now need to be interconnected. Routers can also be used as the network gateway to remote locations such as sales offices or corporate headquarters that are distant from the plant location.

As factory network managers consider using bridges, routers or a combination of the two for their CIM environment, they must keep in mind that LAN internetworking is significantly different than the typical terminal-to-host network currently in place.

LAN internetworks enable users to access multiple systems through shared resources such as backbone networks. As a result, the network designer must examine alternatives for minimizing subnetwork traffic yet keep the number of interconnection devices that traffic must traverse to a manageable number.

A company could, for instance, create several LAN segments and populate them with a small number of users to keep performance high. But if LAN traffic has to hop across multiple bridges or routers to reach an end point, the internetwork design would create processing overhead that could negate the advantage of LAN performance.

Basically, it comes down to a trade-off between simple local traffic with numerous internet hops vs. several large LAN segments with a small number of internet hops.

Once a physical network has been chosen to support factory communications, network personnel must also agree on the network transport protocols and other software-related issues that ensure interoperability among various network components.

An interconnectivity infrastructure allows a variety of network protocols to coexist on the same transmission media. However, dissimilar upper layer protocols still cannot communicate. Laying the interoperability infrastructure on top is the next crucial step in developing a CIM network plan.

Throwing out gateways

In the past, users had to set up gateways between incompatible systems, such as IBM hosts and DEC minicomputers, or, in some cases, manually rekey the data

(continued on page 38)

(continued from page 37)
from one system into another.

This gateway approach, however, degenerates into a growing and unmanageable set of protocol conversions. The preferred interoperability strategy is to enable every device to communicate with every other device by agreeing on a common set of protocols.

Users today have four protocol options from which to choose: the Manufacturing Automation Protocol/Technical and Office Protocol, Open Systems Interconnection, TCP/IP and proprietary vendor solutions.

Factory network planners must examine what installed systems need to interoperate in the CIM environment and what protocols are available for these systems. Then they should select a preferred standard so when new applications are developed, the approach for interoperability is well understood.

Suffering from product lag

Over the years, MAP has been viewed as the first potential solution to achieve full interoperability across disparate systems in manufacturing environments.

But even before MAP could draw a stable contingent of followers, companies looked to other alternatives because users grew tired of waiting for MAP-based products from vendors. Vendors, however, never seriously addressed the MAP market because they wanted to wait until they saw sufficient market demand from buyers.

Since neither side has budged, MAP has stagnated. The technology has been successfully implemented at several General Motors Corp. and GM subsidiary plants as well as a few dozen other large manufacturers.

MAP is based on the seven layers of the OSI reference model adapted for shop floor environments (see Figure 1, page 37). It is designed to allow factory floor devices to interoperate, as well as provide links to technical networks in engineering or other nonproduction offices that support TOP.

MAP specifies IEEE 802.4 Token Passing Broadband technology for the physical network, while TOP specifies IEEE 802.3 carrier-sense multiple access with collision detection baseband Ethernet for the lower two layers.

MAP's features, such as the Manufacturing Message System, make it well suited for machine-to-machine operations where consistent response time is crucial. Because it relies on the token-passing media access protocol, MAP guarantees each station on the network a turn to communicate.

MAP's features, such as the Manufacturing Message System, make it well suited for machine-to-machine operations where consistent response time is crucial.

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By contrast, the CSMA/CD scheme used in TOP networks requires net nodes to compete for the shared bandwidth.

One of the MAP alternatives is to move to the more generalized OSI protocol stack. Like MAP, OSI suffers from a lack of products. However, several industries and governments — such as the utilities industry with the Utility Communications Architecture and the federal government with the Government OSI Profile — have attempted to garner more support for OSI by banding together to encourage vendors to supply products that meet their specific needs.

Another attempt to gather support is through industry conferences such as this week's Enterprise Network Event '92, which showcases state-of-the-art developments in OSI-based networking.

Manufacturers should consider OSI as a viable choice if the company's goal is to minimize the number of protocols throughout the organization. It also should appeal to companies with overseas factories, suppliers or customers because OSI has been embraced well there, especially in Europe.

However, the limited set of available products makes OSI a less desirable near-term solution than TCP/IP or proprietary solutions.

The solution that seems to show the most promise for full interoperability in

the near term is TCP/IP, as evidenced by the recent moves by DEC, HP and IBM to bolster their TCP/IP support. One of the drivers contributing to the spread of TCP/IP in the manufacturing environment is the evolution of Unix as a platform for manufacturing applications.

Growing interest

Originally, interest in Unix was limited to CAD/CAM environments and research centers with high-powered workstations. Now other functions within the manufacturing business are considering developing applications on Unix hardware platforms.

Acceptance of client/server computing makes Unix a prime candidate for server-based applications to support areas such as Manufacturing Resource Planning II (MRP), financial or computer-aided engineering.

With its inherent multiuser, multitasking capabilities, Unix is ideal as a server operating system for factory environments where you have multiple users and multiple applications vying for the server's attention.

Many vendors are now popping up with Unix support for MRP II, data collection and even financial and accounting applications. Unix and TCP/IP are proving to be attractive for those small to midsized companies that cannot afford large mainframe systems. With the growth in Unix applications comes the need to support TCP/IP and its inherent services (see Figure 2, page 37).

In addition to standards-based network protocols, users should also consider proprietary protocols in those instances where a company has standardized on a single vendor's hardware. A traditional user of IBM equipment could link several AS/400s on the factory floor by using an internetwork of token rings running Systems Network Architecture protocols that are interconnected by bridges.

Similarly, a DEC shop could use an internetwork of Ethernets running DECnet, with the possibility of employing an FDDI backbone for large factories or high-volume traffic requirements.

Many organizations today have defaulted to a proprietary solution because they are primarily users of terminal-based networks. However, as new LAN-oriented applications are developed, potentially using different hardware platforms, the network architecture will begin to take on a patchwork appearance.

A mainframe user, for instance, with 3270 terminals linked to cluster controllers tied to the host via point-to-point lines may also have to accommodate NetWare LANs at those same sites that also need access to the host. The user could add a 3270 LAN gateway, but adding these solutions on a piecemeal basis with no overall CIM network plan is only going to create excess expense.

Moving forward today with a CIM network architecture begins with documenting the existing network and systems environment, as well as compiling a detailed set of requirements that provide guidelines for the network architecture selection process.

The next step is to develop a network architecture strategy that addresses issues such as LAN interconnection, backbone technologies, wide-area network connectivity and protocol interoperability. The architecture selection process needs to take into account flexibility for support of future applications and technologies, manageability to provide rapid problem resolution and control of costs, and reliability for those mission-critical applications under CIM.

A CIM implementation is a long-term migration that offers opportunities to reengineer existing business processes and create a competitive advantage for an organization. The net infrastructure is a crucial element, and network planners should be prepared to keep abreast of application development activity and put a solid network foundation in place for the future.

One of the drivers contributing to the spread of TCP/IP in the manufacturing environment is the evolution of Unix as a platform for manufacturing applications.

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Reshaping the net landscape

continued from page 1

most disappears."

The core feature within NetWare 3.2, and the piece around which most other features will be centered, are new X.500-compliant directory services. Other enhancements include the ability to run applications in protected mode, new management tools, a streamlined version of Novell's Internetwork Packet Exchange (IPX) transport protocol and new auditing and imaging capabilities.

Whole new ball game

"The name services [within NetWare 3.2] will blow Banyan [Systems, Inc.] VINES away, and I'm a proponent of VINES as far as their technology goes," said the user, whose sentiments were echoed by others who have seen the product.

To integrate support for the new directory services, Novell started by completely rewriting the core NetWare bindery. The bindery is basically the database where NetWare maintains information about objects or named entities, such as user groups and print servers, known to a particular file server.

With NetWare 3.2, instead of the bindery and its information being file-server specific, the new bindery, which sources say Novell is referring to as the Directory Information Base (DIB), is built around a single distributed relational database supported strategically throughout the network.

Therefore, instead of having to replicate each server's bindery onto every other server on the network, as is specified through NetWare 3.11's NetWare Name Service, all net information from servers is kept in the distributed relational database.

"I don't like NetWare Name Services at all," said Greg Scott, computing services manager for the College of Business at Oregon State University in Corvallis, who has seen NetWare 3.2 but declined to provide details. "With what I saw of [NetWare] 3.2, Novell is throwing away the Band-Aid and giving folks like Banyan a run for their money."

The Ring 0 debate

With NetWare 3.2, Novell will also put to rest the long-standing Ring 0/Ring 3 argument between Novell and Microsoft Corp. by giving administrators the option of running applications in either memory space.

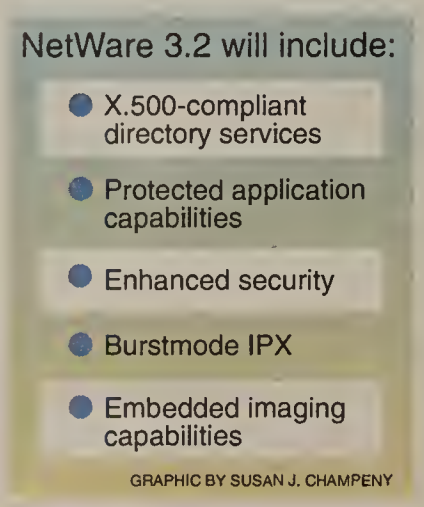
Currently, NetWare, Microsoft's LAN Manager and other network operating systems use Privilege Level 0 memory, also known as Ring 0.

LAN Manager runs applications in a different part of memory called Ring 3, meaning an application can crash without taking down the network operating system and the rest of the network.

Running applications in Ring 3, however, means they must pass through different ring domains to communicate with the core operating system, which can bog down performance.

With current releases of both NetWare 3.X and 2.X, Novell has opted for greater performance by running applications at Ring 0, the same location as the core network operating system. The new release will let customers use Ring 3.

"With NetWare 3.2, [NetWare Loadable Modules] that I trust I can load at Ring 0 — full performance, no protection," said a second developer. "Then new NLMs I don't trust yet I can put into a separate area, a logical domain, that I can run protected."



On the management side, with NetWare 3.2, Novell has combined existing NetWare utilities such as PCONSOLE and SYSCON into a single tool based on the objects included in the network operating system's new DIB.

NetWare 3.2 will also include WAN capabilities that have come to be known as Burstmode IPX, which lets IPX routers send information in larger packets, speeding wide-area transmissions ("Novell reworks NetWare to address design limitations," *NW,* Nov. 11, 1991).

And finally, as expected, NetWare 3.2 will include inherent imaging and auditing capabilities ("NetWare 3.2 to boast new audit options," and "NetWare 3.2 will include net imaging," *NW,* March 9).

"The security and auditing will be a 10-fold improvement over what the current [version of NetWare] has," the user said. "It will satisfy any banking organization that is paranoid about LAN-based security."

NetWare 3.2 is expected to be released to beta sites by the end of next month and will be generally available late this year.

— Senior Editor Wayne Eckerson contrtbuted to this story.

Firm expands Ethernet support

continued from page 4

support 16 coaxial cable and three ASCII devices or hosts; a second floppy drive for storing controller microcode and software for attached devices; as much as 6M bytes of memory; and connections to two IBM mainframes over Synchronous Data Link Control, X.25 and bisynchronous circuits running at up to 128K bit/sec.

McDATA said it is positioning the 90R against IBM's 3174 91R, which links eight coaxial cable devices to a single IBM host but does not support ASCII devices.

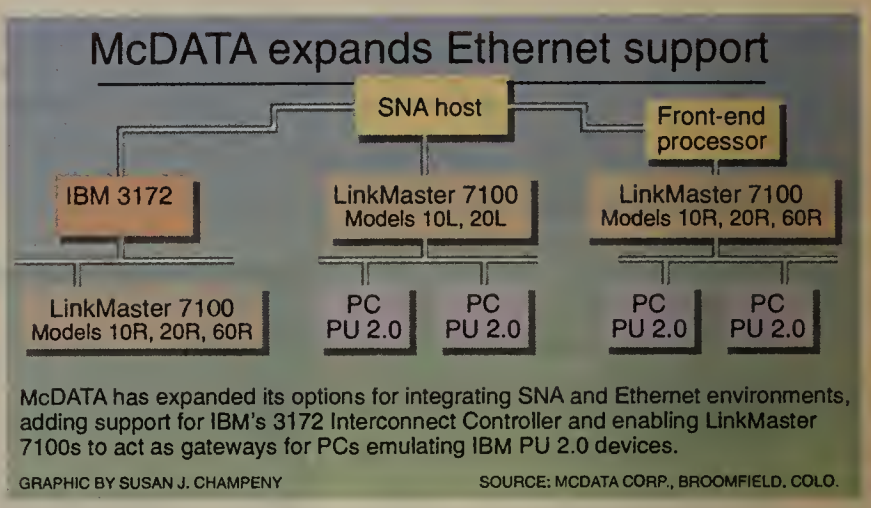
McDATA also unveiled the LinkMaster 7199 Model 032 Terminal Multiplexer, which connects up to 32 coaxial cable users via a single coaxial cable or fiber-optic connection to a 7100 or IBM-compatible 3174 controller.

Individual users access the 7199 via coaxial cable or IBM Cabling System wiring. The 7199 then connects to the control unit using a single connection.

The 7199 is targeted at high-end 7100 or 3174 users that have as many as 128 devices hanging off the controller.

"[The 7199] saves us money by not having to run coax all over the place," said John Scoggins, supervisor of network operations in the Information Systems department of Delmarva Power & Light Co. in Newark, Del., which is replacing 43 aging IBM 3274 controllers with over $400,000 worth of McDATA controllers.

McDATA also rolled out Central Site Customization (CSC) software that allows users to preconfigure 7100 controller diskettes at a DOS-based PC instead of at the controller for easier installation.



Prices for the Model 90R range from $4,925 to $7,215. The LinkMaster 7199 Model 032 Terminal Multiplexer is priced at $3,360. CSC software is available at no charge with each LinkMaster 7100 Network Controller. All products are available now.

High cost chills JCPenney plans

continued from page 1

plications, be they voice, data or video," said Bob Valliere, JCPenney's senior project manager for communications systems. "But ISDN is taking so long to mature that there's probably a good chance it'll be replaced by something else."

After meeting with planners at the regional Bell holding companies and GTE Telephone Operations, a major independent telephone company, JCPenney discovered that its PRI plans were not in sync with those of the telephone companies. "We were too far ahead of them," Valliere said.

> "ISDN is taking so long to mature that there's probably a good chance it'll be replaced by something else," Valliere said.
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The 1,300-store retail chain has invested a good deal of time in exploring ISDN applications and has participated a multicarrier ISDN trial. Network executives recently met with local telephone company officials in an attempt to speed ISDN deployment and reshape its pricing.

JCPenney wanted to consolidate dedicated trunks and private lines used for different services into channels on one or more PRIs from each store — a move that would likely produce substantial savings.

The stores would also benefit from ISDN's call-by-call service selection feature, which would enable them to assign 64K bit/sec B channels to any service on an as-needed basis. Using trunks more efficiently could also save the company money.

But at year-end 1991, PRI was tariffed in only 11 states, where just a third of the switches could actually support the service, Valliere said.

Waiting is hardest part

According to Al Ladwig, JCPenney's communications manager, the company concluded that, based on ongoing research, reasonably priced PRI would not be available to its 200 stores until after 1994.

One of the reasons for that is the telephone companies have not fully established Common Channel Signaling System 7 (CCS7) links between their central offices and with long-haul carriers.

"[CCS7] links to the interexchange carrier networks is a key ingredient in end-to-end ISDN," Valliere said. "We can't go with ISDN until we have total interconnectivity. It would not provide the stores an any-to-any platform."

The retailer's other major concern is PRI pricing. "We learned that PRI would be too costly," Valliere said. "It'd cost more to use PRI at the stores than to stick with the services those stores now use."

JCPenney remains a staunch supporter of National ISDN 1, a specification designed by the ISDN industry to accelerate deployment of standard ISDN service. The second version of the standard, National ISDN 2, includes PRI but will not be implemented by local telephone companies for a few years.

> "We can't go with ISDN until we have total interconnectivity. It would not provide the stores an any-to-any platform," Valliere said.
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The company had hoped that its participation in a multivendor PRI trial a year ago would have helped speed the PRI rollout.

In the trial, a JCPenney store was linked via PRI to a Southwestern Bell Telephone Co. central office. The switch was connected via PRI to an MCI Communications Corp. point of presence, which delivered traffic over a direct PRI link to a data center and a second store.

The company said the trial was a success in that it demonstrated interoperable ISDN. JCPenney conducted imaging and client/server applications over the demo ISDN network.

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Deal opens Windows up

continued from page 2

made up primarily of connectivity and database interface software. At the desktop, EDA/SQL handles users' requests for data by generating the appropriate SQL syntax, transparently distributing the request to database servers, and then returning the desired results to the user.

The Microsoft deal marks another significant deal for IBI. Last year it signed on as an IBM Alliance Partner and EDA/SQL was enlisted to play a critical role in IBM's Information Warehouse framework, IBM's plan for providing seamless access to data stored anywhere in a network.

IBM said it views IBI's latest move as an endorsement of the Information Warehouse by Microsoft, but analysts said the deal may undermine IBM's relationship with IBI.

"This is a fairly bold move for IBI and is probably causing some tensions with IBM," said Tony Percy, vice-president of software strategies at Gartner Group, Inc. in Stamford, Conn. "But IBI needed to have their technology exploited by others, and IBM wasn't moving swiftly enough. As for Microsoft, this agreement just fills in the gaps."

Microsoft claims that the new agreement, announced here at a Microsoft developers' conference, is part of its evolving Windows Open Services Architecture (WOSA) strategy. WOSA details how to create Windows applications capable of accessing a variety of network services such as databases and messaging.

ODBC, which will be a module under the WOSA plan ("Net services strategy debuts for Windows," *NW,* March 2), is based on the call-level specification developed by the SQL Access Group, a consortium of more than 40 vendors and large end users that includes all the leading database vendors, except IBM.

When ODBC was announced last November, the SQL Access Group endorsed Microsoft's ODBC specification and reassured users that access to IBM databases and environments would be provided through gateways or other data access methods. Microsoft now believes ODBC will gain even more acceptance among corporate users because it gives Windows greater access to many different databases and IBM host environments.

"This agreement gives Windows and ODBC more credibility because we now have broad database access covered," said Lowell Tuttman, Microsoft's ODBC program manager.

Analysts said the new relationship with Microsoft and the SQL Access Group was an about-face for IBI. Six months ago, the firm did not even support the SQL Access Group and was instead promoting its own proprietary application program interface.

The ODBC driver for EDA/SQL is expected to be available by year end and will be included in IBI's EDA/Link software at no charge. ODBC is currently available as a prerelease Software Developer's Kit (SDK). The final SDK is slated to be available in the first half of this year. Microsoft will incorporate ODBC in a future version of Windows, as well.

Lotus demos new features

continued from page 4

tions as clients. It is expected to ship later this year.

Lotus also touted Notebook, a new application that is supposed to ship within 15 months for Windows-based personal computers. It features a graphical user interface that lets users specify which databases they wish to access.

The product uses Lotus' DataLens technology to actually tap into the company's own database management system, as well as DBMSs from other vendors, including IBM, Oracle Corp. and Sybase, Inc.

Lotus also unveiled Chronicle, a new feature for Version 2.0 of 1-2-3 for Windows. Chronicle enables multiple users to view and work on the same 1-2-3 spreadsheet, or one user can utilize it to view multiple spreadsheets more easily.

However, 1-2-3 must be run on top of Notes in a LAN. Notes will manage distribution of the spreadsheet across a net as well as control access to it. Version 2.0 of 1-2-3 for Windows will ship with Chronicle later this year.

Apple maps net integration

continued from page 2

from the complexity of the net.

VITAL would make it possible, for example, to migrate a database from an IBM mainframe to a Digital Equipment Corp. minicomputer without requiring end users to change how they access data. Plus, applications developers would not need to alter their products to support different network protocols or database access schemes if they wrote to the Integration Services application program interface.

Apple already offers some of the Integration Services that it proposes in VITAL. Data Access Language and Data Access Manager offer Macintosh and DOS users access to different host databases. The firm's Communications Toolbox lets Macintosh applications use various communications methods by writing to a common interface.

To help managers achieve VITAL's aims, Apple will port these, as well as many integration services it will offer on the Macintosh in the future, to desktop operating systems, such as Microsoft Corp. Windows and DOS, as well as Unix.

The Open Collaboration Environment (OCE) Toolbox, Apple Events and Apple Scripting are three Integration Services that Apple officials have already said will go cross-platform ("Apple lays out net future of System 7," *NW,* March 9).

OCE Toolbox will offer developers sophisticated messaging and security services. Apple Events is the company's interapplication communication facility, while Apple Scripting is a service that will let users script their own sophisticated macros to automate their day-to-day work.

"We're seeing the Mac go into environments that are mostly PCs," Groff said. "We want to be able to cut and paste, run Apple Events, and publish and subscribe [to data] over the network."

Sources familiar with VITAL said the plan is unlikely to be popular for several reasons. First and foremost, integration plans are unlikely to be driven from the desktop. "IS makes these decisions, not the PC managers; they are subservient," a source said.

Second, in order for VITAL to work, Apple, whose Macintosh only accounts for about 10% to 15% of all PC sales, would have to persuade applications makers to use their integration services with a variety of operating systems. Or the company would have to persuade other operating system makers to mesh the services they might offer, such as Microsoft's Open Database Connectivity, with Apple's .

Apple will hand out the first booklet of VITAL's 1,000 pages or so of documentation here at DB/Expo '92. The remaining portions of the blueprint will follow in incremental releases.

Routing snags haunt ANS net

continued from page 6

surprised they're having difficulties."

ANS is a partership among IBM, MCI Communications Corp. and Merit Network, Inc. that operates the NSF T-1 backbone network. That net is now being migrated to the ANS T-3 backbone under an agreement with the NSF.

Problems, problems

Internet users have complained that downtime and poor performance is accompanying the migration to T-3 ("Users' fears mount over NSFNET upgrade," *NW,* Dec. 9, 1991).

ANS officials have blamed the problems on the IBM prototype T-3 router interface cards. Last December, ANS bought the Cisco T-3 routers to supplement the IBM equipment on the T-3 backbone.

The problems ANS is now experiencing with the Cisco T-3 router, which other users have said can operate only at up to 6.318M bit/sec because of its V.35 interface limitations, raise the question of whether technical limits to high-speed routing exist in complex network environments such as the Internet ("T-3 backbone gives utility the best of two net worlds," *NW,* Feb. 10).

"T-3 is a real challenge from a network perspective," Weis said.

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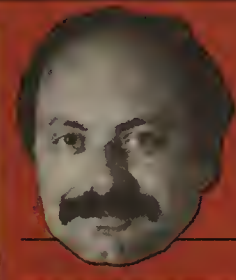

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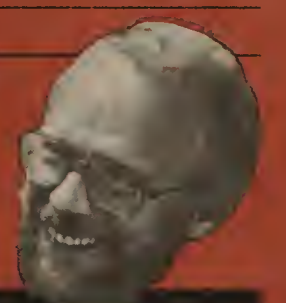

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